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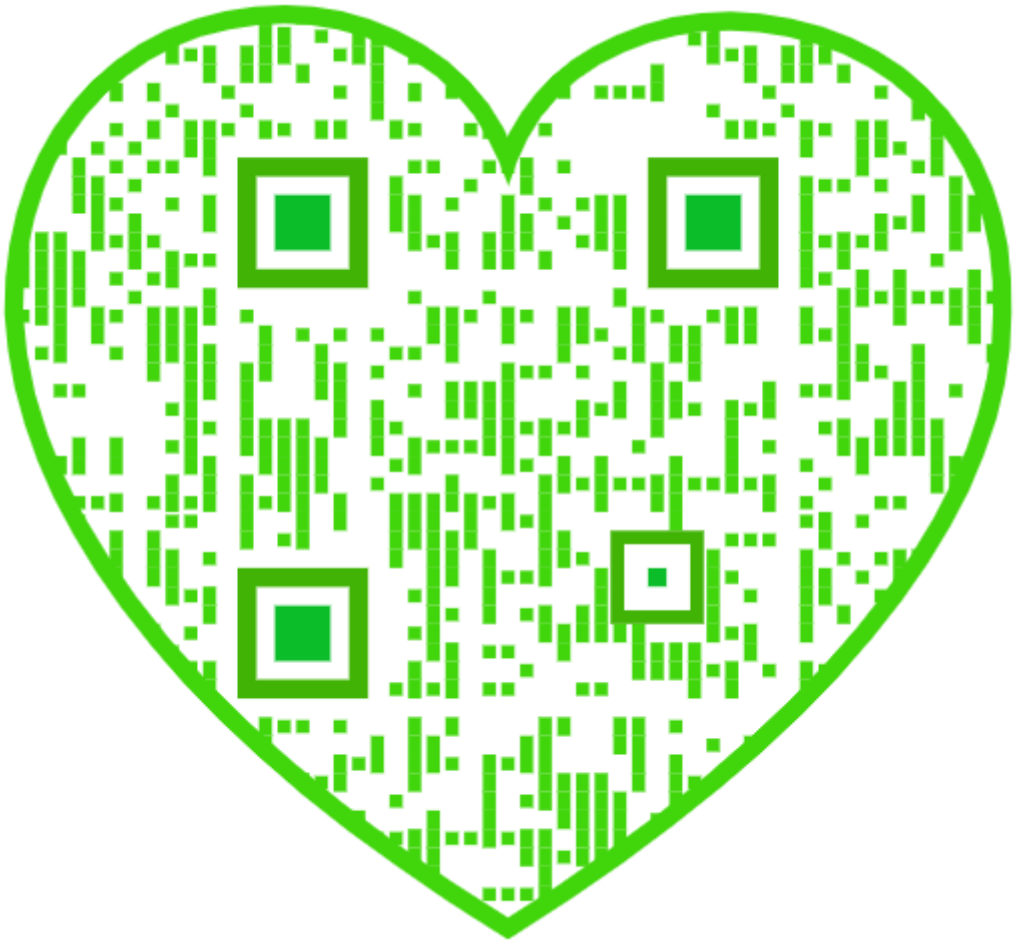

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THE

HORSE-OWNER'S GUIDE:

CONTAINING

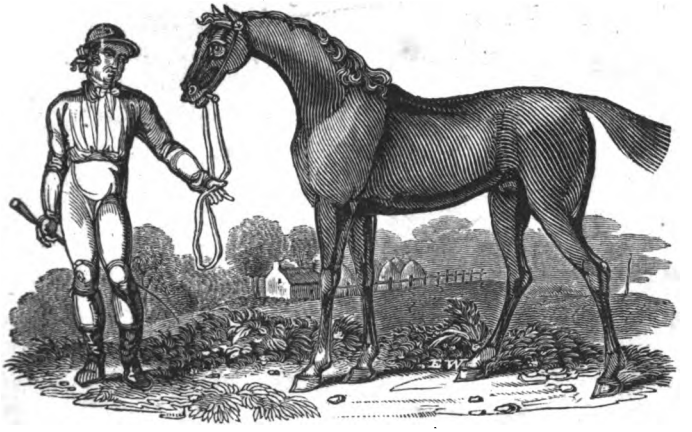
VALUABLE INFORMATION

ON THE

MANAGEMENT AND CURE OF DISEASES

INCIDENT TO

HORSES.



MORE PARTICULARLY

THAT VERY FATAL DISEASE CALLED

Glanders:

WITH MANY ESTEEMED RECIPES.

By THOMAS SMITH,

Late Veterinary Surgeon of the Second Regiment of Dragoon Guards.

LONDON:

PRINTED FOR SAMUEL LEIGH, IN THE STRAND,

BY J. MOYES, GREVILLE STREET.

1818.

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DEDICATION.

TO

LIEUTENANT-GENERAL

CHARLES CRAWFURD,

COLONEL OF THE SECOND REGIMENT OF DRAGOON GUARDS, &c.

SIR,

You are so thoroughly acquainted with the Horse, the various means usually employed in preparing him, either for the menage, or for the more arduous and important services of the campaign; that it was with the greatest diffidence that I submitted a work of this nature to your perusal.

From a hope that it will not be unacceptable, I am now induced, through the sanction of your approbation, to offer it to the public. Highly sensible of the

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many instances of disinterested friendship I have received from you, I feel great pleasure in having it thus in my power publicly to offer my gratitude for those favours, and in this Dedication to testify my regret that a severe wound received in the field of honour, has deprived the country of the services of an officer, so eminently qualified for active military life.

I have the honour to be,

SIR,

With the greatest respect,

Your faithful and obedient Servant,

THOMAS SMITH.

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PREFACE.

HAVING at a very early period of my life been taught to believe, that the glanders is a disease highly infectious, and holding my preceptor in great estimation, I received his opinions on this subject with implicit confidence, without the least doubt of their being the result of experience, and built on the firmest foundation of truth: they were, therefore, held by me with tenacity for a series of years. A circumstance, however, fell under my observation, which very much staggered my confidence, and drew my attention more particularly to a subject which I conceived to be of the greatest importance, not only to those practising the veterinary art, but also to every person interested or concerned in the management of horses.

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Having applied myself to the study of this disease with increased assiduity, and numerous opportunities having occurred in the course of my practice, favourable to my purpose, I found myself compelled to give up my preconceived ideas concerning the origin of this disease, and to embrace those contained in the following Treatise, founded on the most incontestable facts. It is on this account that I communicate the result of my investigation to the public in general, and to the army in particular, and not with a view of obtruding myself upon their notice for the purpose of appearing singular.

Although I am sensible of the opposition I am to expect from those under the influence of a blind zeal for opinions taken upon trust; I, nevertheless, hope, that what I have to offer will be more favourably received by the unfettered and enlarged mind. I have no wish to allure

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any into a fatal security, by inducing them to permit a diseased subject to remain with one that is perfectly free from it. All I have in view is, to shew the real sources from which the disease proceeds, the fallacy of the received opinions respecting it, and to rescue from neglect and premature death, a valuable animal, which, in all probability, under proper treatment, might be preserved.

I have advanced nothing by way of facts, but what has fallen under my own immediate observation, and can be confirmed by the most ample testimony, two circumstances excepted.

One relates to the young horses at Rumford, and the other to the stables at Lisle. The first is given as I received it from a gentleman who belonged to the regiment at the time it occurred. The other, on the authority of a general officer, who communicated it to me. I have inserted them, not only because they

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illustrate my opinion on the subject, but because they also tend to shew that from their obscure ideas respecting the origin of the glanders, the farriers of former ages must have mistaken the effect for the cause; and their erroneous notions of the seat of the disease, and of the extensive progress of its virus through the air, justifies this conclusion. For nothing can be more absurd, than to suppose that the disease is seated in the spinal marrow, or that it could be communicated from one horse to another, at the distance of twenty miles. Nor can any thing set their ignorance of its production in a more clear point of view than these circumstances.

For instance, the disease appears in a quarter where it had never been known before; a doctor is sent for, and the cause demanded: this puts him to a nonplus. Being unable to account for it on rational principles, he hesitates: to have

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made a candid confession of his ignorance, would have sullied his reputation, and deprived him of a customer. He, therefore, looks around him, and happily recollects that there is a glandered horse in the neighbourhood, though at a great distance, from which the wind had conveyed its dire effluvia to the subject before him: hence he is delivered from his dilemma, and the credulous owner is satisfied with the important discovery. Here it is supposed that a vapour, possessing no contagious influence, is capable of producing the disease, after having passed through a medium which would have divested it of that power, supposing it had been possessed, which implies a double contradiction, as the disease cannot be produced by effluvia. And upon this two-fold absurdity, their whole superstructure relative to this disease has been built.

If the doctrine of the old physicians,

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respecting the blood being concocted in the liver, moving outwards to nourish the body throughout the day, and returning during the night, &c.: and also the more recent opinions of others, who affirmed, that it was composed of a series of red globules, and the diameter of each of this series was in exact proportion to the capacity of the arteries through which they were destined to circulate, &c.

I say, if the doctrine of Harvey has sent these absurd maxims into the shades of oblivion, ought not the discoveries of modern chemistry and pathology to banish from the veterinary science the vague, absurd, and irrational maxims of its professors?

That man, who subjects himself to be the dupe of a vulgar error, by whatever authority it may be sanctioned, or however extensively it may prevail, without investigating the principles upon which

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it is founded, certainly acts unworthy of himself.

Had Harvey, had Sir Isaac Newton acted thus, the world would not have been indebted to them for the beauty, simplicity, and inconceivable benefits of their discoveries.

During the time of writing these observations, my attention has been often drawn back to review the basis on which they are founded: and though confident that it could not be shaken by the most minute or scrupulous investigation, yet, when I reflected on the numerous writers on this subject, the talents and weight of authority which I oppose, I have again and again relinquished my design; and, had it not been for the circumstances which occurred at York, it is probable that they would not have met the public eye. And even now, notorious, and incontrovertible as these circumstances are,

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it is with much diffidence that I offer sentiments so novel and opposite to those which have prevailed respecting this disease, in every age.

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OF

GLANDERS.

THIS disease is invariably found to be situated either in the nasal, frontal, or maxillary sinuses; as a discharge from the lungs, trachea, or fauces, through the nostrils, does not constitute a real case of glanders. Sometimes the disease is seated in the frontal sinuses alone, and at other times in the nasal, no other part of the head being affected. And it frequently happens that only one of the nostrils, or one of the frontal sinuses, is diseased; but I have never seen either of the maxillary sinuses diseased, unless the frontal sinuses were also affected.

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SYMPTOMS OF GLANDERS,

ARE inflammation, increased secretion, and ulceration of the mucous membrane lining the nostrils, and the other cavities of the head communicating with them; erosion of the ossa turbinata, and the septa dividing those cavities; also, enlargement of one, or both, of the maxillary glands, contraction of the nostrils, snuffling, and fœtid breath. All these symptoms, however, seldom appear in the same subject, especially in the beginning of the disease, but vary according to the relative degrees of the temperature of the atmosphere to which they have been exposed, the susceptibility of the animal to the impression of the above csuses, and the seat of the disease. Inflammation of the mucous membrane, accompanied with a secretion of thin

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mucus, is generally the first symptom of the disease. The inflammation and secretion increase, the membrane becomes ulcerated, and the nostrils contracted. In some cases, slight inflammation and small ulcers about the alæ-nasi, precede every other symptom. In others, the ulceration of the membrane, as well as the erosion of the bones, is entirely beyond our view. Then the nostrils are so much contracted, as to occasion a snuffling noise in respiration, and the discharge is a mixture of pus and mucus, often streaked with blood, and adhering to the extremities of the nostrils, having an offensive smell, and sometimes attended with a considerable hæmorrhage from one or both nostrils, occasioned either by the violence of the inflammation, sloughing of the ulcers, or exfoliation of the bones. Sometimes the inflammation of the nostrils is so great in a few days, as to render them quite impervious, and the subject

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is suffocated; this, however, is not very common, I have only seen eight cases where death was occasioned in this way.

When the disease is situated in the frontal sinuses only, the nostrils are not contracted, and the discharge is uniformly of a whitish or yellowish colour, and of a clotty consistence, mixed with thin lymph, or mucus, and is not so constant and regular as when the nostrils are affected, but is most copiously thrown off when the subject is first taken out to exercise, as he will remain at rest for a considerable time without any discharge being observed.* When the matter is either secreted or lodged in the maxillary sinuses, it is frequently retained so long, that it assumes a caseous consistence, and the discharge from the nostrils appears curdled, having an offensive smell, and is also most copiously discharged when the animal is first put in motion.

* See Case III.

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It frequently happens (especially in young horses) that a mixture of pus and mucus is discharged through the nostrils, which issues from the lungs and trachea: when this is the case, inflammation of the larynx and fauces is also apparent, attended with a violent cough; and then the velum pendulum palati being under a spasmodic affection, the air is permitted to escape through the mouth, and the pus, &c. is often thrown out along with it, which has probably been mistaken for vomiting: sometimes there is also a swelling between the jaw-bones, but it is generally seated in the centre of the cavity. In some it is pointed, in others more diffuse, and either suppurates in a few days, or entirely disappears. But in the glanders, the tumours are found adhering to the inside of the bones, without going on to suppuration; now and then, however, they are soft and loose in the beginning, putting on an appearance of

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suppuration, as in the strangles; but this never takes place; for, in a day or two, the surrounding inflammation abates, the lymph being carried off by resolution, and a schirrous tumour remains almost immovably fixed to the bone. In several cases, I have seen the mucous membrane ulcerated, and the bones affected, without any enlargement between the maxillary bones, though, in general, the tumours are present in the beginning of the disease. In consequence of the various shapes this disease assumes, it is scarcely possible to exhibit the symptoms in such a point of view, as to enable a person, who has not been in the habit of investigating them, to determine with certainty whether a horse is really glandered or not; for as the disease frequently lies concealed in the cavities of the head, a knowledge of it can only be acquired by dissection. I have seen many horses pronounced glandered,

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where no indication of the disease could be found to exist in the head after death.

DIFFERENT KINDS OF GLANDERS.

A GREAT deal has been written by many authors respecting the different kinds of glanders, some having whimsically divided the symptoms into an endless variety. It is now, however, pretty generally known, that there are only two species of this disease, *i. e.* the acute and the chronic.

The acute glanders is situated in the nasal sinuses, and is frequently a primary disease, as well as a sequel of other diseases, previously existing in the sys-

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tem, particularly farcy, which has probably occasioned them to have been mistaken for one and the same disorder. But notwithstanding that they are produced by the same cause, and appear in the same subject, they are, nevertheless, distinct diseases, having no other affinity than there is between a primary and a secondary disease; and although they often co-exist, yet they frequently precede each other, and exist separately, without a reciprocal production. In one subject, I have seen glanders without farcy, produced by a diseased liver. In a second, both farcy and glanders, the consequence of a diseased mesentery; in a third, farcy alone; and in a fourth, glanders only, the effect of the same disease. Now, if farcy and glanders were one and the same disease, the same result would always take place, and both diseases would certainly exist in the same subject for a certain period before death.

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This, however, not being the case, it appears that there is no more affinity between glanders and farcy, than there is between the same complaint and a variety of other diseases. Now, would it not be absurd to say, that hepatitis and a morbid secretion of the nasal or frontal sinuses were one and the same disease, because they both co-existed in the same subject? the affection of the liver being the primary disease, and that of the mucous membrane the consequence of it, or rather of the debility produced by it.

Therefore, when farcy is a concomitant of glanders, either both the diseases are produced at the same time, perhaps by the same cause; or the farcy has been produced afterwards, by removing a horse suspected of being glandered, from a comfortable situation, to a place where he was exposed to all the variations of the weather, and deprived of every requisite to preserve health; consequently debility

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succeeds, and farcy tumours appear on the surface of the body, not because they are the same disease, but from the injudicious treatment of the subject; for the same symptoms will frequently be produced by the same mode of treatment, where no appearance of glanders previously existed. When glanders is a concomitant of farcy, it is generally in consequence of that disease having extended to the mesentery: when this important viscus becomes so much affected, circulation and digestion cannot be performed with sufficient energy to convey that nutrition to the various parts of the system, which is necessary to supply its consumption; it falls into decay, and then glanders appears, generally a few days before death; not because it is the same disease, but because the nostrils, being an extreme part, and the living power diminished, the mucous membrane becomes susceptible of inflammation, which is probably ex-

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cited and increased by the ingress and egress of the air in respiration; ulceration ensues, and the subject is then said to be glandered; and whether he is immediately destroyed, or permitted to die, glanders is always said to be the occasion of his death; when, in fact, glanders being only a secondary symptom, death was occasioned by the primary disease, though not discovered till afterwards, not being so obvious as an ulcer in the nostrils or a tumour in the skin; yet having no more affinity, than a fever in the human subject, that has occasioned great prostration of strength, has to an ulcer in the toe, or any other part of the extremities. This will appear more evident, if we consider, that farcy is also of two kinds, the acute and the chronic.* The acute is produced by exposing the subject, when hot, to a current of cold air,

* Vide Case II. Subject 1.

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and in the beginning is merely a local disease, the superficial absorbents only being affected; but when the disease is neglected, it frequently degenerates into the chronic. In the acute state, unless the shock has been very severe, the system is not generally affected, and the disease is frequently cured by external means only.

The chronic farcy is commonly produced by breathing an impure atmosphere, and also, when perspiration has been profuse, by a sudden exposure to a cold dense air. This disease is seated in the mesentery, and may, with more propriety, be called atrophia debilium than farcy: the subject exhibits a very emaciated appearance, refuses his food, becomes languid and faint on the least exertion, and the disease more generally baffles all the power of art, and the efficacy of medicine; the subject continues to waste daily, until quite exhausted, when, according to the common

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phrase, he dies hectic; not I believe from an absorption of matter, but from symptoms of irritation or inanition, or both.

In this state of atrophy, the acute glanders is frequently a concomitant, though merely a local complaint, produced by a previous disease, the chylactic vessels being affected, and the whole system contaminated, the ulceration of the mucous membrane being only the effect of death acting partially on the extremities, and (if not opposed by some potent remedy) will continue with augmented force until the vital principle is entirely exhausted.*

The established custom of destroying a glandered horse, to prevent infection, and permitting one affected with the farcy to continue, without the least hope of recovery, in the deplorable state of progressive dissolution, until the living

* See Case III. Subjects 1 & 4.

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powers are extinguished, seems also to oppose the identity of those diseases. Were farcy and glanders the same disease, the same effects would be produced in either case; why then is this marked difference observed in the treatment of the subject? I have known numerous instances of horses that were affected with farcy, having stood with others, perfectly free from it. But in no case have I seen the disease transferred from one horse to another. As a proof, I am induced to offer the following instance: in 1807, a horse whose body and extremities were covered with farcy tumours, stood with another which had the strangles. They were both looked after by the same person, who, as soon as he had cleaned the former, applied the same brush (wet with the matter of the ulcers) to the latter, by which means the virus must have been conveyed to the skin, and though this was repeated every day

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upwards of a month, no transfer of the disease took place. As a farther corroboration of what has been advanced, I would mention, that I have never seen death occasioned by the acute glanders, except by suffocation or hæmorrhage. Now, if this was a constitutional disease, would it not affect the system, and produce death in a variety of other shapes? In the chronic state, glanders does not produce any other disease in the system, if the subject be properly treated, nor occasion death, except by destroying the orbitary processes of the os frontis, and affecting the brain. I have in one subject seen death occasioned by a morbid affection of the brain. In another, matter compressing that organ, so as to occasion lethargy. The opinion prevalent amongst farriers, " that a glandered horse will live until the disease reach the spine, and then, by touching the spinal-marrow, it kills him," seems to be founded on cases

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of death having been produced by an affection of the brain. This opinion betrays great ignorance of the structure of the head of the horse, as the disease could never touch the medulla spinalis, yet it has been supported by great authority. Monsieur Saunier, who is said to have had a genius fitted for studying the nature of the horse, and could himself boast, "That besides the ample instructions received from his father, he had better opportunities than any man living to perfect himself in the science, for the study of which he was born," has in his consummate judgment discovered, and positively determined the case. In his enumeration of the different kinds of glanders, the following are the most remarkable, "First, The cancerous glanders. Second, The contagious head evil; this was communicated from one horse to another at the distance of fifteen or twenty miles. Third, The glanders of the spine

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or back-bone marrow, equally contagious." However absurd the nosological opinions of this author may appear, I have known many persons, in various situations of life, in whom they were so firmly imprinted, that no opposite proof could erase them from their mind.

CAUSES OF GLANDERS.

I. General debility.
II. A previous disease.
III. Breathing an impure air.
IV. Exposure to a current of cold air, or being permitted to drink cold water when hot.
V. A sudden transition from cold to heat, and vice versa.
VI. Infection.

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PREDISPOSING CAUSES.

I. GENERAL DEBILITY.

THIS may be occasioned by a variety of causes, but more generally by a previous disease, evacuation, violent exertion, deficiency of vital air, and want of adequate nourishment to support the various functions of the animal economy. But by whatever cause produced, it may be considered as the forerunner of every disease, the system being thereby rendered more susceptible to morbid impressions, and to cold more particularly, of which the injurious effects are generally in proportion to the enfeebled state of the animal. A very dangerous effect of debility, or being out of condition, is,

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that the wretched subject has a long rough coat, which retains the perspiration excited by exercise, and even in cold weather, when the exercise is not such as to excite sweat, the insensible perspiration, which is constantly issuing from the extremities of the cutaneous vessels, is condensed among the hair, and appears on the surface like dew, whereby cold is produced on the surface of the body, occasioning too great a determination of blood to the lungs, or other important viscus, which is always in proportion to the diminution of the cutaneous perspiration. Such horses are seldom dry throughout the winter, and even those who are so fortunate as to escape any specific disease, continue in that state until the spring, when the subject having recovered a little strength, the long hair being thrown off, and the weather more equal and temperate, the effect disappears.

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II. A PREVIOUS DISEASE.

It will appear from what has already been said, that the glanders is frequently produced by a variety of other diseases previously existing in the system. This will be farther corroborated in the sequel. All I mean to add here, is, that I have seen the mucous membrane ulcerated, the bones carious, and all the characterestic symptoms of the glanders produced by the cut of a sabre. I have also seen one case in which glanders was produced from the effects of a severe fall, by which the frontal sinuses were perforated. In another, the os frontis laid entirely bare, and the concussion so violent as to excite a copious discharge of mucus and pus from the nostrils: and in another, the same symptoms produced by a blow on the superior part of the nasal bones.

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III. VITIATED AIR.

The moment parturition is accomplished, the subsequent existence of animals depends so much on respiration, that they either enjoy health, activity, and vigour, or become enfeebled, emaciated, and diseased, according to the degree of purity, or the state of contamination of the atmosphere in which they breathe. For it is to be observed, that the air in its passage through the lungs undergoes a decomposition, the oxygen, or vital part, being absorbed by the blood, and with this fluid carried to every part of the system, to which it imparts life and vigour; the azotic gas thrown off by expiration, though it may retain its elasticity, is nevertheless deprived of that vivifying principle essential to life; hence it will appear, that disease must neces-

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sarily prevail in stables where a great number of horses stand together, especially as in the barrack stables, where the roof is extremely low, and there is no ventilation by which the air can ascend: the air vitiated by respiration is thus retained in the stable, and prevents the ingress of so much atmospheric air as is necessary to maintain a salutary respiration: hence the same air is reinspired until it becomes a putrid vapour, totally unfit for supporting of health; and though it is not so entirely divested of vital air as to occasion immediate death, yet being in part deficient of this essential principle, the functions of the secreting organs soon become imperfect: hence succeed languor and debility, the usual precursors of every disease, and if the cause be not removed, farcy, glanders, atrophy, and death, inevitably follow. The high walls which surround the barracks, being too close to the back part of the stables, prevent

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the air from entering them. The pavement of those stables, also, either from bad execution, or want of repair, generally retain the urine evacuated by the horses, from which, together with the dung and heat, a noxious exhalation is constantly arising, that greatly tends to increase the impurity of the stables. The litter should not remain under the manger during the day, nor in the stable except in wet weather, but be spread out in the sun, and frequently turned until perfectly dry

EXCITING CAUSES.

IV. EXPOSURE TO A CURRENT OF COLD AIR.

As the heat and impurity of the stables may in general be deemed a remote cause

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of glanders, by inducing a predisposition in the system, so exposure to cold air when hot, may be considered as an immediate and exciting cause, and perhaps, these combined, more frequently produce not glanders only, but every other disease that prevails amongst the horses in the army. The injurious effects of cold applied to the surface of the body, are probably nowhere so frequently experienced as in regiments of cavalry; particularly in barrack stables, where the doors and windows are so parallel to each other, that the horses are continually exposed to a current of air whenever they are set open. It is besides a constant practice of the dragoons, who are ever more careful to preserve their bitts, stirrups, &c. from rust, than the horses from disease, to unsaddle them the moment they return to the stable from exercise; and even though the horses are in a profuse sweat at the time, and

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exposed to a current of air from the doors and windows which are thrown open for the admission of light, the horses remain nevertheless in this state until the appointments are cleaned; consequently, if they are much exhausted, or the perspiration has been greatly increased, cold is produced on the skin, and the animal seldom escapes either farcy, or other cutaneous disease, spasm, &c. of the intestines, inflammation of the lungs, trachea, or nostrils, which frequently terminate in glanders. Whether the cold be thus admitted to the external surface of the body, or cold water be taken into the stomach, the same effects are frequently produced; hence permitting them to drink cold water when hot, and continue at rest afterwards, is extremely dangerous; as diseases of the most obstinate kind are often produced by such inconsiderate conduct.

Another evil of great magnitude, found

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to exist in many of the cavalry barracks, is, that they do not produce a sufficiency of water to supply the number of men and horses they contain; the pernicious consequences of this defect are generally more severely experienced in Ireland than in this country, because at the time that water is the least abundant, the rivers, &c. in many parts of that country, are impregnated with the matter of putrefying flax, which renders it highly injurious to the animals who drink it. And even where the water is adequate to the consumption, the want of a sufficient number of pails to water the horses in, renders their being taken out morning and evening unavoidable. Another evil in Ireland is, the want of proper utensils to carry away the dung, which, on that account, often remains at the doors or windows until it becomes equal to them in height; thus, at the same time that it prevents the air from circulating through

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the stable, it is undergoing a decomposition, and filling them with the impure gas arising from it in that state.

V. CHANGE OF TEMPERATURE.

It is a fact, established by daily experience, that a great or sudden transition from a cold situation to a hot one, has a very injurious effect on the constitution of animals, and the consequences of such transitions are most severely experienced amongst the horses in the cavalry, in removing them from quarters to barracks, from the latter to camp, and *vice versa.* And although it is supposed, that colds are more frequently produced by a sudden transition from cold to heat, than the contrary, yet I have always found glanders to prevail during a campaign.

Although the temperature of a stable and that of a camp may be very different,

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it is not in consequence of this change alone, that all the diseases which prevail during the time they remain in the field, are produced; but from the perpetual alternations of heat and cold, the increased or diminished weight of the atmosphere, more especially the vicissitude of day and night, and this generally is more experienced during the months of September and October, when the nights become long; the air being dry and rarefied throughout the day, becomes moist and dense in the evening. And I have always found, that when the greatest heat prevailed in the course ofthe day, the nights were cool, the fogs more copious and heavy, and that diseases amongst the horses were then also most prevalent.

How the animal economy is affected by such alternations of the temperature and constitution of the atmosphere, will readily appear, if we consider that all animals have a standard of heat, which is

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necessary to be maintained for the preservation of health; of course all deviations from this standard must affect the system, according to the degree or duration of its application: and as they have a power of resisting every thing that has a tendency either to augment or impair this common standard, when the animal is placed in a degree of heat above it, the power of generating cold will be excited to preserve the natural temperature of the body; and when exposed to a degree of cold below the natural standard, the power of generating heat will be excited to maintain the natural temperature of heat. Therefore, when the animal is placed under such circumstances, the constitution has two powers to contend with, which, though salutary and refreshing when duly proportioned, yet, when carried to excess, threaten its dissolution. Although it may be more fatiguing to the constitution to oppose heat than cold, yet

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when exhausted by its influence, it is more susceptible to the impressions of cold; and when enfeebled by any cause, as disease, labour, want of provender, &c. it is more liable to be injured by the alternate influence of either.

Heat being the great stimulus by which those actions necessary for supporting life are kept up, and as heat excites those actions, so cold in an extreme degree, by its sedative quality, diminishes the action of the whole system, as well as that of a particular part when partially applied.

Hence, if a part be cold, and heat be applied, it becomes inflamed, from the action being suddenly increased, which before had been diminished by the cold; and if a part have been exposed to heat, and extreme cold applied, the life of the part is frequently destroyed by the sedative power of the cold. Therefore, when horses stand exposed to the influence of

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the sun (as at picquet) throughout the day, the action of the heart and arteries is increased, and the blood is forced to the extremities with great velocity, the minute vessels are distended, and their power so much exhausted, that when the air becomes cold and dense in the evening, their functions are either suspended or destroyed. Hence, the nostrils being remote from the source of life, and presenting a large surface to the action of the air, are more or less affected, according to the suddenness and violence of the transition, or the relative degrees of the temperature of the air; for whatever the degrees of heat have been, a sudden transition generally occasions inflammation, increased secretion, and, if the cold has been intense, ulceration of the mucous membrane, which is the first stage of glanders.

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VI. INFECTION.

As only two cases of inoculation with the matter of glanders performed on the horse have fallen under my observation, in neither of which was the disease produced, I do not state this on personal knowledge, but merely supposing it probable, from common report.

I grant that the disease may be propagated by inoculation, and, of course, admit that a glandered horse may communicate the disease to another, when they stand together: but as I have never seen one case of glanders that could, with any degree of certainty, be traced to infection as its origin, while, on the contrary, the real cause was generally easily discovered, if not self-evident; it has long appeared to me, that where one case of the disease proceeds from infection, ninety-nine are

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produced by the causes just enumerated. I am fully persuaded, that the established opinion, respecting the disease being always produced by infection, must have arisen from the inattention or want of discernment of those who were first employed in the treatment of horses under the influence of this disease, and who, to satisfy the importunity of the owner, and conceal their own ignorance of the real cause, always found it expedient to refer it to contagion, which seems to have been sufficient to satisfy every inquiry. The opinion being thus established, has been handed down from father to son, from time immemorial, until the present time, without the least doubt of its being founded on fact, and supported by the most irrefragable reasoning: hence they have gone on in the dark, and mistaken the consequence of similar treatment, or situation, for the effect of contagion, as is

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evident in almost every instance where the disease makes its appearance.

This will be more manifest, if we consider that glanders is a local disease, and cannot be communicated by effluvia, but that its propagation must be accomplished by the absorption of its virus. It is very well known that the cow-pox is transferred from one animal to another by inoculation, yet it is "universally allowed not to be infectious."* "The lues venerea is also conveyed from one person to another by the absorption of its virus; but there is no instance where it has given the infection by a vapour."† And the reason assigned for this is, that it is considered as a local disease, affecting particular parts.

Now there is no disease incident to an animal, that is more local and specific than the chronic glanders. I have seen

* Edinburgh Review

† Hunter, on the Venereal Disease.

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an instance where the surface occupied by the disease could have been covered by the end of my thumb; and in many others, the whole circumference of the diseased surface did not exceed three inches. From this circumstance, and the numerous instances I have seen, of horses that have stood with those really glandered escaping the disease, and of others being affected with it, where no infection could possibly be traced, I am decidedly of opinion, the disease cannot be communicated by effluvia; but that in order to propagate it, it is necessary that the matter discharged from the nostrils, be applied to the action of the absorbents in its most recent state, for which purpose, a perforation must previously be made in the skin; and in this way most of the animal poisons, as the vaccine virus, the poison of the viper, the saliva of the dog, &c. are introduced into the system; that is, either with the point of

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the lancet, the teeth of the animal, accidental wounds, or excoriation. This will farther appear, if it is considered that the animal poisons, as the saliva of the dog, the poison of the viper, &c. exert their baneful influence on the different species of animals to which they are applied. Now, if the mucus issuing from the nostrils of the horse be so infectious as it is generally supposed, how is it that those animals which have access to the places where they stand, and in which they are frequently confined, escape the disease? especially dogs, who also feed on such horses immediately after death, when the noxious influence of the matter retained in the nostrils, must be greater than after it has remained for years in a stable. It is very well known, that horses are affected with hydrophobia, when bitten by a mad dog. It is reasonable, therefore, to suppose, that if the glanders were equally contagious, that the disease would

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be equally reciprocal. It is a fact, well known, that the cow-pox is transferred to the milkers, by having wounds or excoriations in their hands; and I have frequently had my hands scratched with the diseased bones in dissecting the head of glandered horses, and covered with the matter, but never found the least inflammation excited, or any other ill effect produced; and I have often applied it to dogs with the same result.

The improbability of one horse infecting another, will appear to be still greater, if we consider the means that nature has provided to prevent it. The best modern writers on hydrophobia agree, that if a person is bitten by a mad dog, and the teeth pass through a stocking, &c. before they enter the part, the saliva may be so completely wiped off, that the person so bitten may escape the most dreadful of all diseases. Now if the intervention of a thin garment may be sufficient to prevent

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the saliva of a rabid animal, which is so much more subtile than the mucus discharged from the nostrils of the horse, is not the hair, with which he is so completely covered, an equal, or better security against the absorption of such a dense cohesive body, which, from its tenacity, hangs upon the extremity of the hair without coming in contact with the skin, becomes dry and hard as a piece of glue in a few minutes, which, except in case of a wound, must effectually prevent it from entering the system? If a portion of unctuous blisters be spread upon the surface of the hair, without rubbing it well in, little or no inflammation will be excited; but if the hair is removed previous to the application, large vesicles will be produced; and if this be the case with a poignant application, which is rendered more fluid and insinuating by the heat of the animal, is it at all probable, that a tenacious mucus, whose density and cohe-

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sion is so much increased by the heat of the subject and exposure to the air, will find its way through the hair to the skin? and, if there be so little probability of this poison being conveyed into the system in the most fluid state, how can it be communicated to it, after having remained on the surface of a rack, in the crevice of the manger, or in a hole in the wall, for months, or years, as is commonly reported? This appears (to me) equally absurd and incredible, as it is for one horse to communicate the disease to another, when fifteen or twenty miles apart. When the vaccine virus is kept for the purpose of inoculation, all possible care is taken to preserve it from the action of the air; because, when it is exposed to a change of temperature, it is decomposed, and rendered inefficacious; and even when the greatest care is taken to preserve it, absorption is more precarious than when it is fresh taken from the

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pustule. Hence it would appear, that the infection of glanders, said to be retained in a stable in consequence of a glandered horse having previously stood there, may rather be considered as a chimera than an established fact, more especially after it has been exposed to all the vicissitudes of the atmosphere for a number of years, when it must either have undergone a total decomposition, and been mixed in one indistinguishable mass with the dung, or have acquired such a degree of solidity, as to render the absorption of it impossible. But to this it may be objected, that, although the mucus has become dry and solid, may not the breath and saliva of the animal render it again so fluid, that it may be taken up by the absorbents? Then, if this were even granted, the lips, and not the nostrils, would always be the first part affected with the disease, which very rarely happens; but, on the contrary, the mu-

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cous membrane, which never comes in contact with either the rack or manger, or any other part of the stable, is generally the first part that becomes diseased: hence an increased secretion of mucus is the first symptom; whereas, if the lips were first affected, inflammation and ulceration of those parts would precede the discharge from the nostrils. Again, although the nasal sinuses, from their great length, are more exposed, and severely affected by the sudden alternations of the temperature and weight of atmosphere, than any of the external parts of the body; yet, from the function of the membrane lining those cavities, they have a greater power of resisting the action of any morbid poison, because it is very rare that absorption takes place in a secreting surface, which is frequently evinced in the venereal gonorrhæa; when the venereal virus is deposited on a part where the skin is thin, and there is little

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secretion, it produces inflammation and ulceration, or chancre; but when it is applied to the urethra, which is secreting a fluid to defend it from the stimulus of the urine, the secretion of the part is so much increased by the inflammation, that the poison is carried off by the discharge, and by that means absorption is prevented. The schneiderian membrane is also a secreting surface, which is constantly pouring forth a mucus to protect it from the action of the air, the irritation of dust, or any foreign body that may find its way into the cavities; and from the dependent situation of the head, the copious and cohesive quality of the secretion, absorption can scarcely take place in the nostrils; therefore, the ulceration observed in the membrane in this disease, does not appear to be produced by the absorption of a poison. But I have frequently observed the lips to have been ulcerated by the sedative power of the cold during the

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night, when the subject was encamped. I have, in a variety of instances, also seen another horse lick the extremities of the nostrils of one that was glandered, clean with his tongue, but never saw ulcers produced by it, either on the lips or the tongue.

That the effects of similar causes are generally mistaken for contagion, will appear from the presence of the disease amongst the horses employed in post-chaises, coaches, &c. where it has always been considered as the effect of contagion. But if we consider that such horses are constantly exposed to the alternate changes of heat and cold, and when almost exhausted by the exertion they are forced to make, are plunged into a river or pond, or have pailfulls of cold water thrown over their whole body, and are afterwards exposed to a current of cold air in the yard until they are dry, it will appear that the disease is produced without the influence of contagion. And do we not also

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frequently see those horses employed in stage waggons, when excessively heated and fatigued with dragging those huge machines, halted opposite to an inn, and remain there until they are quite torpid with cold, and when they arrive at the end of the journey, are treated with as little consideration? Consequently some of them become diseased, and are destroyed, and the stable white-washed, and then another horse is put into the same situation, who, from being subjected to the same treatment, also becomes diseased, sooner or later, according to the violence of the exertion, the temperature of the weather, the susceptibility of the animal to the impression of the atmosphere, or pre-disposition to the disease. Hence they have kept white-washing and shooting *ad infinitum*, having mistaken the maltreatment of the horses for contagion.

This will appear more evident, if we attend to the presence of the disease

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amongst the horses in the army. I have known the horses of a brigade of cavalry perfectly free from the disease for a long time prior to their taking the field, yet before they had been encamped two months, some of them became glandered, although they stood on ground where no horses had been for many months, perhaps years before. From whence then did the disease proceed? Was it contagion? Most certainly, say the advocates for it. "Either No. 1 (A. troop) caught the infection from some horse in the vicinity, being watered at the same place, or stood, when on picquet, or general guard, where a glandered horse had previously stood, or it has been lying in his blood since the death of No. 12, who was shot about six or eight months ago (with whom he stood) and has transmitted the disease to the other horses before he was perceived to be really glandered."

Now supposing all this to be true,

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permit me to ask how No. 1, standing at one extremity of the line, could transfer it to No. 30, standing in the centre, or to No. 64, standing at the other extremity? In what direction did the infection pass the intermediate horses? or how could he possibly convey the disease to No. 40 (B. troop) and No. 20 (C. troop) who stood in two different lines, each of them at the distance of sixty feet from him? And if they received it from him at so great a distance, how came No. 3, and No. 4, to escape, between whom he stood until a few days before he was destroyed? Although to my knowledge these circumstances have frequently occurred, yet they cannot be supported by the opinion that the disease is always produced by infection; therefore, it must necessarily proceed from some other cause.

Besides, if it were even granted that the disease can be communicated by a vapour, the situation of a camp is the

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most unfavourable of all others for such a process; as it is a fact well known, that when the contagious effluvia arising from an animal body is absorbed by the air (like the virus mixed with the blood) it is so minutely divided and blended with the air, that its noxious powers, are either rendered inert or entirely destroyed. "We have learned from experience, that contagious effluvia diluted by a free admission of air, are not communicated from room to room in a house, nor from bed to bed in the wards of an hospital."* "In the open air, and in moderate cases, I discovered that the infectious distance (of variolous miasm) does not exceed half a yard."—"I soon also discovered that the contagion of fevers was confined to a much narrower sphere."† Hence

* Report of the Institution for the Cure and Prevention of Contagious Fevers in the Metropolis, May 5th 1805.

† Haygarth on Infectious Fevers, page 8.

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it appears impossible for one horse to communicate the disease to another in the open atmosphere, when twenty yards apart, the usual distance of one troop from another at camp.

If the horse could breath or expectorate by the mouth, I am of opinion, that he would not be more subject to this disease than any of the other quadrupeds, but in this respect he, so far as I know, differs from all the other species of animals, in being deprived of this salutary function; and if we reflect on the number, length, and delicate texture of the ossa turbinata, the extensive surface presented to the action of the air by the nostrils, the various changes of this fluid, and the great volumes inhaled at every inspiration, we can readily conceive how the disease is produced, without assigning the least share, or even a co-efficiency to any other cause.

When a person removes from a warm

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situation to a cold one, should the cold be extreme, and respiration performed by the mouth, the effect of the air upon the lungs and trachea will be so great as to excite a cough, with a painful sensation of the breast; hence the mouth is shut, and he attempts to breathe through the nostrils, and then, the sensation at the extremity of the nose is so acute, that he immediately endeavours to relieve it by the application of a handkerchief, so that by alternately breathing through the mouth and nostrils, and by applying a medium to both, the dangerous effect of a direct exposure to extreme cold is either mitigated or prevented: of such privileges, however, this noble animal cannot avail himself. Therefore, unless some important change in the organs of respiration could be effected, which is impossible, he will be always subject to inflammation of the mucous membrane by a sudden change from one extreme of

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temperature to another, nor does it seem possible to suggest any effectual means to prevent it under such circumstances, more especially when in the field and exposed to an enemy.

In remarking upon the length of time which the glanders is supposed to lie latent in the system, I have said six or eight months, because I have frequently heard it asserted by those who think that the disease is always propagated by infection, that they have known it lurk so long, either in the blood, in the nasal or frontal sinuses, or some other secure repository in the system, from the time of its disappearance on the death of one victim, until its effect became evident upon another. On some occasions it is subtile, active, and rapid in its progress, at other times it is so dull, sluggish, and dormant, that the friends of this opinion are like men at their wits' end, not knowing how to account for its absence.

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Should it be asked why this malign agent is so torpid at one time, while at another he flies with such activity from the nostrils of one victim to another, that nothing can impede his progress, or elude his virulence: I must refer the inquirer to the author of a very late publication on this subject, who has been so obliging as to answer the question. He says, "Experience demonstrates that those who are at large in a field, are seldom attacked; while those which are too much crowded and confined in warm stables, without a free air, seldom escape the disease, and the ravages of it are more rapid during the heat of summer than in winter." The reasoning of this gentleman however (who appears to have mistaken the effect for the cause) for three very obvious reasons, seems rather to favour a very different conclusion.

The first is, that the same volume of air does not contain the same proportion

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of oxygen when the atmosphere is sultry, as when it is condensed by the cold of winter. Secondly, That in the same situation, the air is not so much vitiated by respiration in cold weather, as it is in hot weather. And, thirdly, That the air does not (usually) move with the same velocity during the heat of summer, as it does throughout the winter. Consequently, the ingress of atmospheric air into close stables is more easily prevented in summer than in winter. And from the want of this exhilarating agent, the supposed contagion of this author seems to be only a natural production, as the disease is as certainly generated in the situation he describes, as that ague is produced by the miasma of bogs and fens. This should seem to demonstrate that his contagion is a very great libertine; give it only a large field and a pure atmosphere, it is as innocent as a lamb, as harmless as a dove; but if it is confined in a warm stable, so

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much crowded as to endanger suffocation, then, indeed, it rages so furiously, that nothing can resist its influence, unless, when thus agitated, and moving about with great velocity, then, perchance, a strong expiration, or a violent snort, may ward it off, and transfer its attacks to some more enfeebled object, already half suffocated by the absence of a free air. The truth is, that one animal of the same species will exist longer in any given quantity of atmospheric air than another; and is also able to resist a greater vicissitude of it: hence it is easy to conceive how one animal becomes diseased, and another escapes, under the same circumstances. This is frequently verified in large assemblies (especially when the weather is warm, and free air deficient) when the delicate constitution, and those debilitated by disease, are often carried out under a suspension of the vital functions, while the robust and hardy are very little;

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if at all affected; and it is equally certain, that the vital principle is extinguished by the sedative power of the cold in one animal, when another in the same situation escapes unhurt.

Although the length of time that the disease may remain latent in the system, is generally considered as being within the limits of a few months, yet the belief that the matter of it may remain in a stable for an incredible series of years, and still be capable of exciting the disease, is almost universal.

When at Longford, I was informed by General ———, of some French authors having asserted, that when "the Duke of Marlborough took Lisle from the French, the glanders broke out there amongst the horses with such virulence, that the stables were obliged to be shut up; that they remained so for thirty years; but, from the circumstance of another war, they were again opened, and

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then, from the infection having (as they affirm) remained in the stables all that time, the horses that were put into them became immediately glandered."

Now, as Lisle was a frontier town, it is probable that the stables were strong close-made structures, like vaults, the windows low, and not an aperture or crevice in the roof, through which the air could find its way; consequently, when horses that had stood in the open atmosphere, and were probably exhausted by the great exertion and fatigue they generally undergo on such occasions, were precipitately forced into such a situation, and huddled so close together, that they could not lie down but in rotation, the small portion of vital air would soon be consumed, and the halitus produced would fill the whole building, which, on such occasions, will evidently appear condensed on the walls, and trickling down the racks as if they were

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exposed to a gentle shower of rain: hence respiration becomes oppressed, and the unfortunate animals stand panting for that refreshing air which they had inhaled in copious streams but a few days before, when encamped. And from the want of this vivifying principle alone, in my opinion, sprung all the diseases which those writers asserted to be the effect of contagion.*

The presence of the disease in all confined situations, the increased number of cases that have taken place in the army since the erection of cavalry barracks in England, and the greater prevalence of it in Ireland, all tend to demonstrate that the disease is generated in such situations.

When the regiment returned from the continent in 1795, in consequence of

* Was it embalmed? or how was it preserved? Had it consisted of brass, instead of mucus or pus, it would certainly have been reduced to ashes long before the expiration of this period.

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contrary winds, the horses were kept on board ship upwards of seven weeks; during this time, many of them became glandered, and others died without any symptoms of this disease. Now as one of the ships in which the disease prevailed had never been in the transport service before, and consequently these were the first horses that had ever been in her hold, whence did the disease proceed? Could it have arisen from the bottom of the North Sea, in the month of December? Besides, whether the ships were new or old; whether in the transport service before or not, made no difference; the health of the horses, or the production of the disease, could not depend on so trivial a contingency. It was the depth of the hold in some of them, the obstruction of the air by the forage, &c. the removing the wind-sails, and covering up the hatchways in which they were placed, that indubitably rendered

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the ships above alluded to, so extremely injurious and fatal to the horses, and produced effects similar, in some degree, to those too frequently experienced in mines, and other subterraneous situations.—Now, if a person, in descending a pit or vault, be suffocated by the mephitic vapours condensed at the bottom, and another person, in attempting to save him, should share the same unhappy fate, would it not appear extremely absurd, if a third person, in relating the dismal catastrophe, was to affirm, that the first was suffocated by the impure gas contained in the pit, but that the second died in consequence of the infection he received from his friend, as he lay expiring? The reports generally inculcated about horses being affected with the disease in a stable, in consequence of a glandered horse having stood there some years before, appear to me equally absurd and fallacious, because the disease is not produced by any infec-

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tion retained for such a length of time in the stable, but from the construction of it being such as to exclude that vital principle contained in the atmosphere, without which, no animal after its birth can be preserved in health.* And if the construction of a stable be such as to produce the disease in one instance, may not the same cause be equally efficient in all succeeding cases, unless proper means are immediately employed to remove it?

But here an important question naturally presents itself. If the disease be not communicated by infection, why does it prevail in certain troops in the same regiment, while there are other troops entirely free from it? This circumstance, however, is so far from favouring the agency of infection, that it militates strongly against it. It will appear from what has already been said, that this may

* See Case VII. No. 9.

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arise from a variety of causes, totally independent of infection. For instance, the horses of one troop may be properly treated when they return hot from exercise, but those of another troop may be exposed to a current of cold air, and left in that situation before they are made clean and dry; or the ventilators of the stables occupied by one troop, may be properly regulated according to the temperature and condition of the atmosphere; but the stables employed by another troop may be neglected, either by shutting them during the night, which is a common practice, or by permitting them to remain in the same state in all the variations of the weather. Disease must necessarily prevail in such a troop; while the other will either escape altogether, or the disease will very rarely occur. This is also evinced by a variety of diseases prevaling in one troop in the same regiment, with which the horses of an-

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other troop are not the least affected. Thus I have known a great number of horses of one troop affected with grease during the winter, and those of another troop totally free from it, though placed in the same situation, the duty and treatment (except in the stable) the same. And it is a fact, well known, that pneumonia, &c. frequently prevail among the horses of one troop, and those of another escape, and this is more especially the case with young horses when they first join the regiment, and intermix with the old horses. Is it not notorious, that the horses in one troop of the same regiment are found to be in a far worse condition than those of another troop? Is leanness, or being out of condition, contagious? Certainly not. For though such a state is frequently the effect of disease, and may also render the subject more susceptible to morbid impressions, it is not a disease in itself; it cannot be

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communicated from one animal to another; and when it prevails in a troop under such circumstances, it must arise from some improper treatment. I have known the horses of a troop perfectly free from disease when under the command of one officer, and on his leaving it, have seen glanders prevail to a considerable extent under the care of his successor, the troop remaining in the same situation, the allowance and quality of the forage identically the same, nor could any plea for infection be admitted. But the disease may also prevail in a troop where the horses are fatter than those of another troop; for though horses that are fat may resist the impressions of cold longer than those that are lean, they are more susceptible to the influence of heat, and liable to become diseased in any confined situation, which is the case in almost all barrack stables, and is more especially experienced on board ship, where the

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fattest and best looking horses generally suffer most.

In one of our cantonments in Ireland, the horses of a troop occupied the same stables in which the horses of another troop that preceded it became glandered; but neither then, nor during the time the regiment remained in that country, were any of the horses affected with this disease. I cannot here help observing, that, under the plea of cleaning out the stables, feeding and watering the horses, two men (at least) go to each stable every morning, an hour or two before the appointed time. Consequently the horses are deprived of their rest, and those that eat slower than others, of a portion of their oats also, the whole exposed to a current of air, and watered before they are clothed, or the owners present to dress them, and when they arrive, supposing the horses have not been watered, many of them receive an additional pailful.

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There is an order, that when the horses return from exercise, their feet are then to be washed and picked out; it frequently happens, however, that the dragoon, to avoid the trouble of going again to the pump, waters the horse first, reserving a little water in the bottom of the pail to wash the feet. But should the horse be very dirty, he lets him remain in that state until he becomes dry of himself. From the inattention of the non-commissioned officers, I have known this practice to prevail to such an extent in a troop, that the horses which returned from exercise at eleven o'clock A.M. have been found with their legs encrusted with mud three hours afterward. And although the diseases with which the horses of that troop were then affected were undoubtedly the effect of this treatment, yet it was generally supposed that they were produced by an imaginary agent. The disparity of condition, and the long rough

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coat, so observable in troop-horses during the winter, are amongst the lesser evils occasioned by this conduct.

CURE OF GLANDERS.

ALTHOUGH I know that the cure of glanders is extremely difficult and tedious, even where it is found practicable, and that the greatest care and attention in the treatment of the disease have generally failed, yet I by no means coincide in the opinion which has hitherto prevailed, respecting the disease being incurable. It appears probable, that the opinion may with more propriety be imputed either to the dread of infection operating so forcibly on the minds of the persons con-

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cerned with the subject, that a sufficient time has not been allowed for the performance of a cure; or, to our imperfect knowledge how to treat it; rather than to the disease being in its nature incurable; more especially in some stages of it. When a valuable horse falls lame, should the least probability of his recovery appear, no time is thought too long, nor the expense regarded, if this important object can only be attained; but should one of an equal, or even superior value, exhibit the least symptom of glanders, and if this symptom does not abate, or entirely disappear in a very short time, all is alarm, and the preservation of the stud demands the destruction of the unfortunate victim. Hence arises our imperfect knowledge of the art; for what improvement can possibly be made by the most sagacious practitioner, when he is only called upon to determine whether the subject is really affected with the disease, and if so, death

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immediately closes the scene: hence, also, it is to be regretted, that few medicines have had a fair trial in the treatment of this disease, as they have generally been given with a view to destroy the animal, and determine what portion would produce that effect; or (if otherwise intended) the use of them has been left off before their sanative effects could be ascertained with any degree of precision. And it is perhaps equally to be regretted, that the moment a horse is suspected of being glandered, little attention has been paid to his general treatment, even when a cure has been attempted. I do not, however, mean to say, that any method of treatment hitherto adopted will cure the disease in every stage of it; for when the mesentery is so much affected, as to render the lacteals incapable of separating the nutritious part of the aliment, and the affection of the nostrils is but a secondary symptom, a cure is not to be

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looked for; nor when the ossa turbinata and the septa dividing the cavities of the head become carious, is a more favourable result to be expected. But as the same bones are frequently destroyed in the human subject, in cases of syphilis, and a cure performed with a little deformity, time and farther experience must determine whether, with reference to the horse, it is practicable in the glanders.* However that may be, when the disease is merely local, that is, when there is no other disease existing in the system, and the mucous membrane only is affected, whether in the frontal or nasal sinuses, a cure may be effected.

* I have lately taken all the turbinated bones from one nostril, which operation was attended with very little hæmorrhage.

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TREATMENT.

As soon as the disease is discovered, the subject should be separated from the other horses, and put into a good stable (by no means a close one) where he can breathe a pure air; he ought to stand clothed, be well attended, and exercised twice a day; to be trotted out, if strength permit, and brought in at a walk, and made perfectly clean and dry when he returns to the stable; the nostrils to be cleaned with a sponge dipped in warm water; the rack and manger also to be frequently washed with warm water, scrubbing them well with a hard brush. In the beginning of the disease, a rowel may be introduced between the maxillary bones, or the cautery may be applied to

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the tumours; vesicatories and other stimulants may be applied to the external surface of the frontal and nasal sinuses. When the disease is seated in the nostrils, a perforation may be made in the superior part of the nasal bones, and an injection introduced, without the least inconvenience. But when a perforation is made in the os frontis, and an injection is employed, however simple it may be, if a large quantity is thrown into the frontal sinuses by a syringe, part of it will be forced into the maxillary sinuses, from which it cannot all escape, and therefore it may do some mischief, and strong injections will be found highly injurious. In those cases, a slight application of the caustic to the diseased part will be found preferable: it is only when the disease is seated in the nostrils, more especially in the inferior extremity of those cavities, that mild injections can be employed with advantage. One of the following for-

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mulæ is to be administered every morning about nine o'clock. To some subjects, No. 1, 2, and 3, may be repeated in the evening.

(No. 1.)

Take

Powdered sulphate of copper, two or three drachms.
Aniseed, half an ounce.
Honey, sufficient for one ball.

(No. 2.)

Take

Powdered sulphate of copper, two drachms.
Calomel, half a drachm.
Ginger, one drachm.
Aniseed, half an ounce.
Honey, sufficient for one ball.

(No. 3.)

Take

Calomel, one drachm.
Extract of opium, half a drachm.
Ginger, one drachm.
Linseed, half an ounce.
Syrup, sufficient to make one ball.

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(No. 4.)

Take

Muriate of quicksilver in powder, one scruple, or half a drachm.
Extract of opium, one drachm.
Gum Arabic, half an ounce.
Simple syrup, sufficient to form one ball.

(No. 5.)

Take

Œthiop's mineral, half a drachm, or a drachm.
Extract of opium, half a drachm.
Aniseed, half an ounce.
Honey, sufficient to form one ball.

(No. 6.)

Take

White arsenic in powder, one drachm.
Gum asafœtida, half an ounce.
Simple syrup, sufficient to form one ball.

(No. 7.)

Take

White arsenic in powder, two drachms.
Columbo root, six drachms.
Extract of opium, half a drachm.
Mucilage of gum Arabic, sufficient to form one ball.

(No. 8.)

Take

Sulphate of iron in powder, two drachms.
Powder of bark, one ounce.
Extract of opium, half a drachm.
Honey or treacle, sufficient to form one ball.

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As all the preparations of mercury are apt to occasion great debility when long continued (more especially the hydrargyrus muriatus) they should be combined with as much opium as the stomach and bowels will possibly admit of; and during the exhibition of them, great care should be taken that the patient is not exposed to the exciting causes of cold: particular attention must also be paid to the general state of the system; and if the appetite for food be considerably diminished, accompanied with great depression of strength, a small quick pulse, languor and trembling after exercise, the use of them must be suspended, and either No. 7, or No. 8, administered, until the patient has in some measure recovered his appetite and strength. At this time, also, the exercise must be very moderate, either turning him loose in a large stall, or leading him about for a short time twice a day; the litter being always spread under him

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in the stable, and every thing that has a tendency to lessen irritability and increase the living power employed. The aliment should be of the most nutritious kind, given in small portions, and frequently varied. When the subject refuses the oats, or does not eat a sufficient portion to support the system, great advantage will be found in varying the aliment, by giving alternately, oatmeal, malt, &c. according as they are found most agreeable to him; and, provided the patient will take it, as much bran, either mashed or in any other form more acceptable, should be given as will keep the bowels in a soluble state; if the bran be refused, or enough for the above purpose be not taken, and costiveness prevail, the bowels may be opened by administering common, neatsfoot, or castor oil, &c. assisted by large glysters of warm water, but drastic purgatives should always be avoided. By thus alternating the re-

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gimen and medicines, according as circumstances may require, and by a judicious administration of opium, &c. the strength of the patient may be supported, and the exhibition of the medicines continued until the symptoms of the disease are subdued; and if the medicines be continued long enough, and the subject allowed to recover strength before he is put to any violent exertion, or exposed to the influence of any exciting cause, no relapse will take place: nevertheless, should the subject, at any future period, be exposed to the same cause that produced the original disease, and the system be equally susceptible of its influence, the disease may recur, without the least particle of infectious virus having remained in the system.

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PREVENTION OF GLANDERS.

THIS disease is so obnoxious and fatal to one of the most noble and most useful of animals, that every means which can be devised, having a tendency to prevention, ought to be pointed out and employed for the diminution of so serious an evil.

It appears evident, that the great object which the designers and constructors of barracks had in view when they were erected, was, to cover as great a number of men and horses, as they possibly could under the smallest roof, without the least regard to the health of either.

The first means of prevention which presents itself, is, to take down the pre-

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sent barracks, and rebuild them on a more eligible plan: but as I am aware that this is not likely to be accomplished, however laudable or necessary the suggestion may appear; I will only point out such alterations and improvements, as, I conceive, may easily be made in the stables as they at present exist, to render them more healthy, and of course less liable to originate disease. It being essentially necessary to health, that the horses should stand in an equal temperature, and breathe a pure air, I would in the first place strongly recommend, that in all large stables having rooms above them, there should either be a funnel placed in the centre of each end, to ascend through the rooms and summit of the roof; or four apertures, two on each side, should be made near the rack, to pass obliquely through the wall close under the floor of the rooms. In each of these apertures a tube ought

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to be fixed, properly attached to the wall; the tops of these should be constructed so as to prevent the rain, &c. from descending through them upon the horses.* And as the gas rendered noxious by respiration, is specifically lighter than the air of the atmosphere, and of course occupies the upper part of the stable, it would necessarily escape through these tubes, and thus give free admission to the atmospheric air into the stables, it being understood that the ventilators below must correspond with those above.

In the present structure of the barrack stables, the openings above the doors have been considered the most eligible parts for ventilating them; but they are so

* I recommended these apertures in 1804: they have since been made in some of the barracks, but without tubes, which renders them very defective, as they frequently permit a current of cold air to rush immediately upon the horse's head, which a tube would effectually prevent, and render their effect always salutary.

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exactly in the centre of the stable, and opposite to each other, that they rather permit a partial current of air to rush direct through the stable than ventilate it throughout; and from their present defective formation, it is difficult to moderate this current in stormy weather, without closing them altogether; hence it is either too violent, or insufficient for the purposes intended. I would therefore propose, in lieu of them, that one of the doors be built up entirely, and an opening made near the bottom of the wall; this aiduct to be carried obliquely upwards from the outside, and to enclose a tube, or frame-work of wood, having a board or cover fitted to its inner mouth, and made to slide up and down at pleasure, with proper stops to retain it at any given height, in order to exclude, or regulate the admission of air, according to the state of the atmosphere. These would diffuse the air gently throughout the

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stable, and having a free communication with the ventilators above, would purify them from the corrupted vapour, and the horses would always be supplied with a sufficiency of fresh air, without being exposed to a violent stream of it. The windows also, instead of opening sideways, as at present, should either do so from the top downward, or else on a pivot in the centre, and placed so high in the wall, that when open, the air may be circulated through the stable without affecting one horse more than another: but as they are intended for the admission of light rather than of air, if the stable is otherwise properly ventilated, keeping them open, more especially when they are low and opposite to each other, should be dispensed with, except in close warm weather; and this should be particularly attended to when horses return hot from exercise. For it ought never to be forgotten that if the windows are at these times

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thrown open, and the weather stormy, the horses are in more danger of being affected than if they were placed in the centre of a large field; no stable, therefore, should have the doors and windows opposite to each other; or where they are so constructed, care should be taken that both are not open together on such occasions.

The stables belonging to inns, &c. in towns where troop horses are frequently quartered, have generally a very indifferent appearance, and many of them very low roofs. But in them there is, between the wall and hay-loft, and extending the whole length of the rack, an open space, which, by giving free ascent to the foul air the moment it is produced, answers all the purposes of ventilation; but in barrack stables, where the construction will not admit of such a vacuity above the rack, the vitiated air is always occupying that part of the stables in which the horses

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heads are confined. The remedies, therefore, recommended, would not only prevent disease amongst the horses, but also render the men's rooms over the stables more cool and healthy than they are at present. The number of these ventilators should be regulated by the size of the stable or the number of horses it may contain. As an impure atmosphere proves more injurious and fatal to young animals when first exposed to it, and as habit lessens its noxious influence, it is requisite, that when young horses join a regiment of cavalry, they should be put into the smallest and best ventilated stables which the situation of the regiment can afford, where they ought to remain until perfectly broke in, before they are intermixed with the old horses, and then they should be given to dragoons as their own, and not as spare horses. The food for a few days after they join, should be bran mashes and hay, and afterwards oats, with a bran mash at night only, which may be

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continued as circumstances shall require. Those of a full habit may be bled, and to the whole a dose or two of gentle physic may be administered at proper intervals, which must depend on the strength of the subject, and the operation of the first dose. They should have moderate and regular exercise every day, until they are brought into proper condition, and then they may be sent to the riding-school, where they should be very gently treated at first, increasing their exercise as they become habituated to it: it ought always to be remembered, that young horses are more safely and expeditiously trained by gentle means, than the harsh treatment too generally preferred; and as they are peculiarly susceptible of disease at this time, great care should be taken to have them properly looked after when they return to the stables, never permitting them to drink cold water, to be exposed to a current

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of cold air, or be left until they are made perfectly clean and dry. In training young horses for the ranks, some commanding officers never extend their views beyond the riding-school. The age, condition, or general treatment of the horses, form no part of their arrangement. Hence, to see a serjeant or corporal parade a certain number of recruits and young horses, and attend them to the riding-school or lounge, is a common occurrence: but to find them looking after those men and horses when they return to the stable, except it happens at a stated stable hour, is a circumstance very rare indeed. Thus I have known recruits ride, and young horses lounged in successive lots, from the morning stable hour until four o'clock in the afternoon.

When a recruit joins a regiment of cavalry, he should be taught that his horse is of such importance, as to claim his most particular care on every occasion.

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But, instead of this being the case, he is taught to look upon him as an object of less moment than his accoutrements, being allowed to clean and polish those articles at the very time that the horse demands his utmost attention. Formerly, a dragoon never was permitted to clean his accoutrements until he had paid every requisite attention to his horse, and then he carried them to his quarters, in which they were cleaned and hung up. But since the erection of barracks, the horse appointments have been always cleaned and kept in the stables; therefore, when a dragoon goes to stable in the morning, he generally takes with him a bag, containing brushes, a black ball, a polishing iron, buff-stick, sand, &c. which he too frequently employs to the neglecting of his horse: and, in consequence of the non-commissioned officers having been inured to this practice from their entering the service, it is now so firmly established,

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that it seems impossible to prevent it so long as the appointments remain in the stables. Were the stirrups, &c. japanned, and the leather to remain brown, this might in some measure mitigate the evil. But the most effectual means of preventing it would be to build places for holding the accoutrements, separate from the stables, in which they should always be cleaned and kept, except when in use.

The frequency of foot drills too, tend greatly to alienate the men from their horses. These are often so injudiciously ordered, as to shew that little or no regard had been paid to the health and comfort of the horses; for instance, on the return of a squadron from being exercised on wet dirty ground, the men, horses, and accoutrements, were found to be almost cased with mud. To have cleaned themselves, horses, &c. after being in such a state, all the subsequent part of the day was scarcely adequate; yet the whole of

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the men paraded again for foot drill at three o'clock in the afternoon. The men must dine, must appear clean on the parade, the bits, stirrups, &c. must be secured from being corroded with rust; therefore, the horses, though of the greatest importance, must be neglected to accomplish those minor considerations.

In cold weather, the horses ought to stand clothed throughout the day, more especially in stables where the air is admitted through low windows, as the doing so contributes greatly to the comfort, health, and appearance of the horses, by preventing the current of air from checking the insensible perspiration which is constantly going on through the cuticular pores. Great attention ought to be paid to the ventilation of stables in the evening; for if the doors, windows, &c. are all kept shut during the night, the horses will be found hot and languid in the morning; at which time, the doors

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and windows being suddenly thrown open, and cold water administered, the horses become severely affected; they ought always (if possible) to be watered by measure: when circumstances render their being taken out to water unavoidable, it should only be done once a day, and then, not before nine in the morning, nor after two o'clock in the afternoon, during the winter.

All forage having the least tendency to produce debility or disease, such as oats that have been much heated, mow-burnt or musty hay, &c. should be rejected. Were horses always to stand in small stables not containing more than six or eight horses each, and properly constructed, disease would not be so prevalent as it now is, nor would horses be so susceptible to the various changes of the atmosphere to which they are exposed: for do we not see those that are constantly kept at grass, if having enough

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to support them, endure all the vicissitudes of the weather, without sustaining the least injury?* and is it not chiefly from remaining stationary at camp, that they suffer so much from the variations of the atmosphere? When horses therefore are placed in such exposed situations, and the weather is unfavourable, they should be frequently walked or trotted about gently for a short time, but never made to sweat, or be brought back hot into the lines of their camp. When they are sent out on piquet, or to be placed as videts, they ought not to be galloped, as they may remain posted on the summit of some eminence for hours without moving, such expedition not appearing necessary in stationary camps.

When the weather is cold, wet, and

* Nevertheless, I have seen glanders and farcy produced while the subjects were at grass; but then they were kept on low damp grounds, and generally enveloped in a thick fog during the night.

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stormy, oil decks lined with flannel will be found of great service; some advantage too might probably be found in the use of small light leather nose-bags having numerous perforations in the bottom, and lined with coarse flannel. The common muzzle, or even a strong net lined in the same way, might be found serviceable: these expedients would at least prevent the horses from eating the earth, or biting one another.

It must have been frequently observed, that horses when at liberty, always turn their croups to the wind in stormy weather; it would certainly be of advantage to grant them this indulgence when in camp; it being a fact well known, that the horses whose heads are kept exposed to the wind in rough weather, are more severely affected than those which stand in a contrary position.

Turning horses out to good grass, would also be found an excellent means, not

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only of preventing glanders, but a variety of other diseases. All young horses, and such others as are unfit for regimental duty, ought to be thus disposed of during the summer, and when circumstances admit of it, this step will be found of great advantage to the whole. I do not mean that the horses which are under the immediate influence of the disease should be turned out to grass; but when its harbingers, *viz.* want of appetite, languor, and debility, proceeding from hot crowded stables, are present, then turning them out to grass, or even into the open air, will be of great service, grass being of easy digestion, nutritious and lenient qualities; which, together with breathing a pure and bracing air, and voluntary exercise, will be found the most efficacious means of increasing the living power and invigorating the solids, by restoring the functions of digestion, respiration, &c. with their reciprocal influence on the

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system. Cases of this description have been often mistaken for an affection of the lungs; but the laborious breathing observed here, is the mere effect of the enervated state of the whole frame, without the formation of a specific disease. Hence, exposing them to a temperate atmosphere, has been attended with great benefit. But although breathing a pure air is also requisite in cases of inflammation of the lungs, yet, in other respects, a different mode of treatment seems to be indicated.

Troop horses, however, have been frequently deprived of the benefits intended in turning them to grass, either by too many of them having been put into the same field, and suffered to be continued there too long before they were changed, or by turning them out to grass of an inferior sort, or sending them into low marshy ground, and remaining out too late in the autumn. Were they divided

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into small lots, and always sent to good grass, upon ground on which they could lie comfortably, and changed in proper time, they would receive far more benefit than they usually do.

When horses are embarked, and as soon as they are properly shipped, a wind-sail should immediately be placed in every hatchway communicating with the hold in which they stand; and if there is any thing in the way that may obstruct the free and general circulation of air amongst them, it should, if possible, be instantly removed, and a sentinel established to attend exclusively to the wind-sails, in order to turn them as the wind changes, to keep them free and from twisting, and also to prevent the sailors from removing them, and covering the hatchway, a practice some of them are much addicted to on the most trivial occasions; but as the very existence of the horses depends on their being kept open, none of them

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ought to be secured, as it is called, except in cases of absolute necessity. The food when at sea, should be chiefly composed of bran mashes and hay, which, with the water, should be given in smaller portions at a time, but more frequently, than is usual: the legs, eyes, and nostrils may be spunged with cold water; the dung, and whatever else may appear to increase the halitus of their situation, should, if possible, be removed as soon as discovered.

If a horse is observed to look dull, and to refuse his food, venesection may be performed, and the nostrils spunged with vinegar instead of water, and if costive, large glysters of warm water should be administered; at the same time, the air may be purified by pouring sulphuric or nitric acid on marine salt; this fumigation should frequently be repeated, particularly at the extremities of the hold. If inflammation of the lungs take place,

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then bleeding, glysters, and external stimuli, such as blistering, rowelling, &c. with bran-mashes and watergruel for diet, are principally to be resorted to: some horses, by being long confined on board ship, become quite furious; but as this is frequently the mere effect of a resolute animal to disengage itself from so confined and painful a situation, such cases ought not to be confounded with the disease called the *mad staggers*, as the moment they are liberated the symptoms disappear; two cases of this description occurred in our passage, 1795.

But as all the diseases that take place on ship-board, are occasioned by the absence of vital air, and the confined situation of the animals, no effectual remedy, debarkation excepted, can be pointed out. The practice of keeping horses cool, for some time prior to embarkation, must rather be injurious than salutary, as there is no situation in which horses are usually

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placed so close and warm as the hold of a ship; the cooler, therefore, they are kept before they enter it, the more sensibly must they be affected by the change.

Finally, when the glanders prevail in a regiment, the horses ought to be frequently and cautiously examined, and on discovering the least symptoms of the disease, the subject should instantly be separated from the other horses, and the stable in which he stood be well washed with warm water and soap, scouring the rack and manger with a hard brush. If after this, there be any doubt or apprehension of the infection still remaining in the stable, the ablutions of water may be repeated frequently, and recourse had to a fumigation with a mixture of sulphur and charcoal; or marine or sulphuric acid gas may be detached through the stable, keeping the doors and windows shut during the process. There are, besides the above, a variety of other means recom-

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mended for purifying stables supposed to be infectious, such as lime-water and size, pitch, petroleum, &c. but whatever gives the hardest surface ought to be preferred, as it will be most easily made clean. These, however, are inserted for the benefit of the debilitated and delicate subjects, to whom a foul rack, manger, &c. are always disagreeable: they may also be of use to the fearful and incredulous proprietor.

The following cases will probably elucidate and confirm the opinions advanced in the foregoing dissertation.

FIRST.—SYMPTOMS OF GLANDERS MAY BE MISTAKEN.

1.

In 1795, on the 20th of October, two

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horses with symptoms very similar were shot: in one case, the septum narium and the turbinated bones were found carious, and the mucous membrane ulcerated: but in the other, no ulceration of the membrane, no erosion of the bones, nor any disease, was found to exist in the head; but, the left lobe of the lungs was found adhering to the fifth, sixth, seventh, and eighth ribs, the whole lobe become arid and dry, having an unnatural pale colour, and of a consistence somewhat resembling that of numerous folds of coarse brown paper, which, being put together wet, had become almost dry.

There was also a large substance of a conglomerate appearance and bluish colour, situated at the division of the bronchia, rather on the diseased side, and when cut into was found cellular; the cells were full of pus, and numerous small ulcers were discovered in the in-

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ferior part of the trachea, from which pus also issued.

2.

In 1806, on the 20th of May, a horse pronounced to be glandered was shot; on examining the head after death, no disease could be found there, but the lungs were covered with tubercles, and of a much paler colour than in a healthy state; and in the abdomen, the mesentery was found thickened, and the mesenteric glands so much enlarged as to resemble a kidney-bean both in size and figure.

SECOND.—FARCY MAY EXIST IN THE SYSTEM WITHOUT PRODUCING GLANDERS.

1.

Drogheda, 1803. In August, a horse was shewn to me, as being lame in the near hind foot. I at first supposed it occasioned by inflammation of the sensible

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frog; but, about ten days after, I saw him again, and found a small tumour seated on the inside cartilage, and the leg considerably enlarged, the subject on the least pressure expressing great pain, and when put in motion, touching the ground with the tip of the toe only; the pulse was quick, respiration difficult, unnatural glare in the eyes, and the pupils very much dilated. The symptoms were now too manifest to be mistaken, and though every thing was done for him that practice had sanctioned or theory could suggest, his appetite and strength declined daily, the external absorbents became affected, large tumours arose on the surface of the body; a succession of which continued until he was reduced to a mere skeleton, and death put an end to the most miserable state of existence I ever saw. Here no symptoms of glanders appeared, but after death the mesentery was found so highly diseased that

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it could not support the intestines in their convolutions.

2.

In 1807, a troop horse, after lingering upwards of three months, died on the 9th of March. In this case, the liver was found highly diseased: the lungs were also affected; but all the other parts, either in the thorax or abdomen, were free from disease. This subject never exhibited the least symptom of glanders; but a few days before death, numerous circumscribed tumours arose on the surface of the body.

THIRD.—GLANDERS EXISTING WITHOUT PRODUCING FARCY.

1.

In 1800, some time in August, a horse shewing symptoms of glanders was put into a stable appropriated for such cases:

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a short time afterwards, he was found in such a lethargic state in the morning, that he would lie quite still until the farrier gave him a ball, and turned a rowel under his throat; and the Dragoon who looked after him complained "that he was afraid to ride him, as he staggered, and was like to fall down when taken out of the stable in the morning; that he continued stupid until he began to run at the nostrils, and then he became as sensible and active as ever:" he was shot. On examining the head, the septum dividing the cavity of the brain from the frontal sinuses was found entirely wanting, but the dura mater was entire, and in its natural situation, and the sinuses full of pus and lymph, which from the communication with the nostrils being too small to give it a free descent was compressing the brain, and occasioning the lethargy observed in the morning. In this case the nostrils were not in the least

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contracted, but there were large tumours under the throat, the subject was very fat, had a fine coat, and oleaginous feel of the skin, but not the least appearance of farcy.

2.

August, 1805, a poney lingered a long time from an affection of the liver, and died: after death, the viscus was found so much diseased, that it was taken out with difficulty, and on laying a portion of it on the least inequality of the ground, where it was not sufficiently supported, it mouldered to pieces. This subject became glandered a few days before death, but no farcy appeared.

3.

On the 16th March, 1807, a horse that had been gradually wasting for upwards of four months, died. I saw him on the 12th, at which time no symptoms of

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glanders were perceived; I saw him again on the 16th, glandered: no farcy appeared in this case.

4.

About the 12th of March, 1808, a horse was reported to me, to have a running at the nostrils: on examining him, I could discover nothing more than an increased secretion of thin lymph, without the least inflammation of the pituitary membrane. But on the twentieth, I was desired to look at him again, and then I was decidedly of opinion that he was affected with the chronic glanders; and accordingly he was removed from the other horses, and next morning he was found affected with lethargy, and fell down motionless on the attempt being made to take him out of the stable; he died on the evening of the 22d. On examination, the frontal sinuses were found divided into a variety of small

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cavities or grooves, by thin plates of bone, extending from the division of the nostrils to the basis of the brain, and the septum was thickened to a quadruple proportion above its natural state, and the small cavities between the bony laminæ were full of pus and a blackish fetid lymph. The dura mater was also very much inflamed, and its cohesion with the orbitary processes and os frontis entirely destroyed: but no farcy or any other disease was perceived.

5.

On the 20th of August, 1808, I was ordered to inspect a horse belonging to the Royal Waggon Train, at Rye; here, I found the mucous membrane ulcerated in the extremities of the nostrils, but no symptoms of farcy, nor any enlargement between the maxillary bones; as these bones, like all the other bones of the head, had no other covering than the common

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integuments, and as this subject could not live many days, the energies of the system being almost exhausted, the ulceration of the mucous membrane was probably accelerated by those extreme parts being more immediately exposed to the exciting causes of inflammation.

FOURTH.—GLANDERS AND FARCY PRODUCED AT THE SAME TIME BY THE SAME CAUSE.

1.

December, 1805, the regiment returned from Ireland: a ship, on board of which were twenty-five horses, being separated from the rest of the fleet by adverse winds, was detained eight days on her passage, and being tossed about by a boisterous sea, the hatchways were obliged to be shut during part of the time; the consequence was that the horses were affected with farcy, glanders, and all the most malignant diseases, to which

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the animal is subject: some died in consequence of a diseased mesentery. In one, the mesenteric glands were enlarged to an enormous size; another died of ascites abdominalis, the only case of the disease that I have ever seen in the horse; in one subject, large abscesses formed in the legs, and on each side of the neck, behind the ears, &c. which, for want of energy in the system, never healed; but a constant succession of imposthumation took place until the vital principle was quite exhausted, and death put an end to a wretched existence. This subject became glandered a few days before death. This case stands opposed to the established opinion, respecting the contamination of the system, by an absorption of matter from the ulcers in the nostrils: for here (as well as in almost every other case) all the effects attributed to absorption, were produced not by the absorbents, but in consequence of those organs having lost

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their power of action: could the lacteals have conveyed nourishment to the system, or the lymphatics the superfluous lymph to the thoracic duct, these symptoms would not have presented themselves. In such a case, I grant that there is an affinity between farcy and glanders, but it is the affinity of cause and effect; and so far was the glanders from being the cause of the "contamination of the whole frame," that it was merely the effect of that state, and appeared on the very eve of dissolution. But where glanders is a local disease, whether in the frontal or nasal sinuses, no such affinity exists, neither is the system contaminated by an absorption of matter from the ulcers in the nostrils. A case in which about three inches of the septum narium, from its inferior insertion upwards, was entirely destroyed by the process of ulceration; yet no contamination of the system took place: but, on

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the contrary, except for a few days at its commencement, the subject ate all his allowance of forage, continued in good condition, and recovered perfectly.

2.

August 16th, 1806, the regiment paraded in marching order on the Hoe, Plymouth, at three o'clock in the morning: the horses remained there upwards of five hours without moving; during this time they were exposed to a very heavy fog, consequently four young horses which stood without saddles, or cloths, were instantly affected with farcy, and one of them exhibited symptoms of glanders also: those affected with farcy only, recovered, the other was shot. In this subject, the symptoms of farcy entirely disappeared upwards of six weeks before he was destroyed, and the glanders alone continued; than which nothing, in my opinion, can prove more

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satisfactorily the locality of the two diseases, and their independence of each other, nor militate more strongly against their supposed identity: were they the same disease, and the symptoms of both present, ought they not to have remained visible until death?

3.

March 17th, 1806, a horse reported to have a running at the nostrils, and refusing his forage, was put into an hospital stable: I saw him on the 23d, no symptoms of farcy or glanders were then observable, but he appeared very languid and weak, and did not eat the whole of his food at any time; he continued in this state upwards of three weeks, when tumours larger than an egg appeared on the hind extremities; these were opened, and discharged a thin ill-formed pus: soon after this, his legs began to swell, and the surface of the body was

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covered with circumscribed tumours. He now assumed a very wretched appearance, and became gradually weaker, until the 20th of May, when he died. For a short time prior to his death, an increased secretion of thin lymph was observed to issue from the nostrils, which became more copious as his strength declined, and two days before that event, the mucous membrane became ulcerated, and tumours appeared on both maxillary bones. After death, the mesentery was found of a dull red colour, and very much thickened, and the mesenteric glands greatly enlarged. Here farcy and glanders were both present, and as this is the only instance I ever saw of a horse becoming glandered, that stood with another previously diseased, I must observe, that this subject was put into a stable where a glandered horse stood, all the cavities of whose head were affected. But as the cause must necessarily

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exist before the effects became visible, if the enervated state of the subject before he was sent to the stable, and that of the mesentery and mesenteric glands after death, be considered, it will evidently appear that these symptoms, which appeared in the very last stage of existence, were the effect of the disease previously existing in these important organs, and would as certainly have taken place had the subject stood alone in any other situation.

FIFTH.—GLANDERS PRODUCED BY COLD, AND DEATH BY SUFFOCATION.

1.

June 22, 1793, the regiment encamped on the plain of Cysoing; the weather was extremely hot. In about a fortnight afterwards, however, we experienced a few days of incessant rain, accompanied with a high wind, in consequence of

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which, many of the horses in two troops that faced the wind were severely affected about the head. In four cases, the nostrils were rendered quite impervious, which occasioned their death; and several others, that were less affected, became instantly glandered: but in the other two troops, where the horses stood in a contrary direction, no case of the disease took place.

2.

1805. When encamped on the Curragh of Kildare, a very old horse was rode throughout a very fatiguing field day, during the former part of which the weather was extremely hot, but changed just as the troops returned to the lines, and continued very cold all night. The regiment being ordered out again next day, the same horse was mounted in the morning as usual, no indisposition having been observed in him until he came to the

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troop parade, when a hæmorrhage from both nostrils was discovered. Being in the lines, I saw him in this state, and found the mucous membrane very much inflamed and ulcerated about the extremity. There was no cold or previous discharge from the nostrils.

3.

February 2d, 1806, a dose of physic was administered to a young horse, and he was taken the following day from Birmingham to Coventry, the troop to which he belonged having marched there, so that the unfortunate animal was led eighteen miles under a violent purgation, having nothing to drink, and being exposed to an intense frosty wind. He became instantly glandered from the ear to the lip; the skin on that side of the head most exposed to the air, appeared as though a mild blister had been applied to it.

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SIXTH. — HORSES THAT HAVE STOOD WITH THOSE REALLY GLANDERED, AND HAVE, NOTWITHSTANDING, ESCAPED THE DISEASE.

1.

The first instance that fell under my observation, was at Manchester, in the beginning of the year 1790, no case of the disease having taken place in the regiment for eight years before. The subject stood between two other horses in a stable, without any partition: he was shot, and both frontal sinuses were found highly diseased. The two horses between which he stood, escaped all infection.

2.

1793. A young horse, affected with a cold, stood with two glandered horses in a hovel at Baisieu, from the 21st of September, until the 12th of October. They were shot: he remained in the regi-

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ment six years afterwards, without ever having the disease.

3.

1795. A young horse joined on the 5th of August, and having suspicious symptoms on the eighteenth, was then, together with an old horse in a similar state, sent from camp, to a stable in the vicinity, where they remained together until the 20th of October. The old horse was then shot, being badly glandered: the young one recovered, and did not become glandered afterwards.

4.

The next day, Quarter-Master Sangster put his charger and bat horse into the same stable from which the two horses just mentioned had been removed, and though no precaution was taken, except that of wiping the manger with a wisp of straw, neither of them became dis-

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eased. The charger remained in the regiment six years afterwards!

5.

1805. Two horses affected with farcy, were put into a stable by themselves on the sixth of October. They stood together until one of them became glandered, and was destroyed; the other remained in the regiment until 1811, when he was sent to Portugal.

6.

October 12, 1805, two horses of the same troop, the one having a running at the nostrils, and the other without the least symptom of any disease (unless being thin, or in low condition, may be so called) were both put into a house in Philipstown, where horses suspected of being glandered were then standing; the one with the discharge from the nostrils, was tied to the same ring from which a

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glandered horse had been taken and shot only two days before; he remained there upwards of three weeks, recovered, and remained in the regiment until 1811, when he was also sent to Portugal. The lean one was sent back the next day to the stable from whence he had been removed to this receptacle for bad cases: he remained in the regiment till the 7th of July, 1806; was then cast, being broken-winded, but not otherwise diseased.

7

November 29th, 1806, a horse was taken out of the ranks and pronounced to be glandered; he was accordingly shot. The subject stood between two horses on the parade, and between two others in a stable, without any kind of partition, neither of which became diseased.

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8.

November 9th, 1806, a horse (No. 4.) in G. troop, was put into the same stall out of which a glandered horse had been taken the same day, and though no means whatever were used to prevent infection, no disease appeared. He was cast, being broken-winded, in 1808, but was not otherwise diseased.

9.

April 24th, 1807, a horse badly glandered was shot, and next day, a broken-winded horse, that had stood with him for six weeks, was given to the dragoon to ride, who looked after my own horse, and he stood with my horse upwards of six months afterwards, and never exhibited the least symptom of the disease.

10.

May 11th, 1807, No. 2, (E. troop) was shot, being very badly glandered; No. 16

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of the same troop stood with him until he was destroyed, but never shewed the least symptom of the disease.

11.

On the 19th of February, 1812, No. 17 (B. troop) was shot, being badly glandered in the nasal sinuses; and on the 22d of the same month, No. 10 (A. troop) was put into the same stable (which only holds one horse) without any precaution whatever having been taken to prevent infection; remained there three weeks, recovered perfectly, and did not become affected with the disease afterwards.

These facts are at variance with the opinion of those persons who say, "That were they engaged to transfer the disease to the East Indies, they could not devise a better mode of conveying it there, than that of taking a portion of the plastering from the wall of a stable, in which a glandered horse had previously stood."

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SEVENTH.—THE DISEASE PRODUCED BY THE CONFINED SITUATION OF THE STABLES.

1.

To establish this fact, namely, that the disease is produced by the confined situation and construction of barrack-stables, I shall select only a few out of a great variety of proofs. The first is, that for twelve years prior to the erection of cavalry barracks in this country, only one case of glanders appeared among the horses in the Second Dragoon Guards. This solitary case occurred in March, 1790; and from that time, no symptoms of the disease appeared again, until the regiment went into Norwich barracks, in 1794,* where it soon prevailed.

* I mean that part of it which remained at home, as the disease appeared amongst the horses in foreign service, in 1793.

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As this was the first regiment that had ever occupied that barrack, was the disease (I may be permitted to ask) generated in the stables, or did it proceed from the bricks just burnt in a kiln, or from the mortar, so inimical to its production?

2.

The whole regiment left the barracks in Devonshire (where the glanders prevailed) in June, 1801, and went into quarters at Bristol, and its vicinity. The disease immediately disappeared, and no symptom of it re-appeared, until the regiment arrived in Ireland in 1803.

3.

The troop which was at Plymouth Dock barracks left that place, and with it the disease, in the beginning of May, 1801, and never shewed the least symptom of it until it became stationed at Longford barracks, in 1804.

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4.

The troop from Taunton barracks, where the glanders prevailed, left it in May, 1801, and never experienced the disease again, until the 7th of March, 1805, when at Roscommon barracks.

5.

September 23d, 1805, the regiment returned from the Curragh camp: six troops were sent into barracks at Tullamore and Phillipstown, and two troops into quarters at Portarlington; glanders and farcy prevailed among the troops stationed in barracks; but no symptoms of either of those diseases among the horses billetted in quarters: hence it should seem that if the constructors of barrack stables had really contemplated, and intended the production of this disease in the execution of their plans, they could not have succeeded more happily than they have done in such a speculation.

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6.

To illustrate this more fully, and point out the conception and birth of glanders beyond the possibility of a doubt, permit me to take notice of a few places of its acknowledged nativity; the first I shall notice is a temporary barrack stable, in Pembroke-street, Plymouth-dock. This had formerly been a tennis-court, it contained twenty-four horses, the roof is high, but the situation low, and so completely surrounded with other buildings, that no pure atmospheric air could enter it. In this stable, four cases of glanders were produced in a troop that occupied it but a very short time: the disease, it must be recollected, did not exist in the troop when it first arrived there, and on its removal from the situation immediately disappeared, and no symptom of it recurred until the troop went into a more impure situation, in Ireland, three years afterwards. Now if the disease be so infec-

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tious as it is generally represented, is it not reasonable to suppose, that some of the horses which stood next to those affected, would also have become diseased in this long interval between the removal and re-application of the real cause?

7.

I shall next advert to the stables at Dundalk, where the disease soon manifested itself in a troop, in which no case of glanders had occurred for four years prior to its entering them. These may with propriety be called cellars rather than stables, being formed of the subterraneous vaults or arches, which constitute the base of the infantry barracks; they have a paved and sunken area in front, extending along, and communicating with the whole range of vaults, or stables; this area is just wide enough to let one horse pass another, and they descend into it (and thence into the

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stables) by a declivity or opening at the extremity of each wing; they have a door and window in front, next the area, and a small aperture, at the further end of the vault, which passes through the wall obliquely upwards to the surface of the yard; the ground rising immediately in front to the height of the lintel of the doors, a small loop-hole through the wall behind, and a complete arch above: What abundant sources of disease!

8.

The next specimen I shall offer, is two stables situated at the back of the barrack, at Roscommon. The roof here is so extremely low, that many of the horses touched it with their heads; not an aperture in either, except a window on each side of the door, which, however, were so near to a high wall that no air could get at them. In these two stables we had six cases of glanders produced;

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not one occuring at the same time in the other stables in that barrack, although the horses had been all exercised together, and had been uniformly watered at the same place, until the symptoms of the disease became evident to every one who saw them.

9.

The next instance is a stable at Longford, which contained forty-two horses: the roof of this stable is very high, and forms a complete arch, with sleeping rooms above, so that there is no ventilation upwards; against two sides of it (the south and north) shed-stables were built, and their roofs ascending above the floor of the rooms, prevented any windows being made laterally, so that the air could only find ingress to the stables by the doors and windows at the two ends. This did not, however, admit a sufficient quantity to support so great

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a number of horses in health: both glanders and farcy, consequently, prevailed amongst them.

That the disease here was positively occasioned by the absence of pure air, the following circumstances will fully prove: the first troop of the regiment that occupied this stable entered it on the nineteenth of March, 1804, and continued in it until the twenty-third of July, during which period some of its best horses became glandered; but, no sooner had this troop left the stable than the disease disappeared from among them, but still continued its ravages in the troop that succeeded it, until the eighteenth of January, 1805, when the glass windows fixed above the doors were taken down, and lower ones put up in their stead; four large tubes, two on each side, were at the same time introduced into the wall, which tubes ascended obliquely through the roofs of the shed-stables. Six points

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of communication with the atmosphere being thus opened, the cause of the disease was removed, and though the same troop continued to occupy this stable until the twenty-ninth of July following, its baneful influence never appeared. The foregoing statement requires no comment; and can at any time receive the most indisputable confirmation.

The disease not accompanying the first troop when it left the stable, and the progress of it being arrested in the second troop, by removing, through the means of ventilation, the cause which produced it, added to the circumstance of its never appearing again during the time the troop continued there, are facts, which every one will be able fully to appreciate.

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EIGHTH.—TREATMENT OF HORSES TENDING TO ORIGINATE THE DISEASE.

To shew that the treatment of horses is so intimately connected with their preservation from disease, as has been stated; I could select a period of between fifteen and sixteen months, in which, a greater number of cases of glanders occurred in the regiment, than during the whole period of twenty-four years preceding.

On the 23d of September, 1805, the regiment left the Curragh, when from a great deal of unfavourable weather and other circumstances, the horses in general were in extreme low condition; they were nevertheless kept in severe daily exercise. The regiment embarked for England in the latter end of December, when some of them after debarkation could scarcely carry a saddle.

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After halting a short time at Birmingham and Coventry, the regiment arrived at Dorchester on the 12th of March. At that time, and for two months afterwards, the weather was extremely unfavourable for the improvement of their condition, being generally a severe frost with a cold wind; yet, neither frost nor snow prevented the horses from going out to field exercise. They were also taken to be watered at a river, at half-past five o'clock in the morning, and again before stable time in the evening. The situation of the barrack is very bleak; it faces the north, and as the wind blew almost invariably from that quarter, and the windows were kept open in all the vicissitudes of the atmosphere; and as it rushed through upon the horses with great force, they seldom returned without the certain consequence of many of them being affected with violent shiverings, the prelude only to a variety of diseases, especially glanders.

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About the 12th of August, the regiment marched from Dorchester towards Plymouth, where the men of four troops embarked. On the 29th, the men were again disembarked, and the regiment assembled at Exeter. Thence it moved to Winchester, where it arrived on the 18th of October. Not having now to contend with the alternate currents and noxious atmosphere of barrack stables, it was hoped that a riddance of the disease would also have been the consequence. This hope, however, was not realized; for no circumstances or situation can protect the horses from disease, when connected with injudicious treatment. The horses being now taken out to water at half-past six in the morning, and again at three in the afternoon: and as the trumpet was ordered to sound for the horses being taken to water invariably within half an hourof its sounding for the dragoons coming to the stables, it

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must indisputably have happened in general, that the horses were taken to water without being previously fed, which, indeed, I know to have been the case at Dorchester, even with the horses in the hospital stables, in a languid state, and with an empty stomach: hence they drank with an avidity which few dragoons have either prudence or inclination to restrain: spasm of the stomach and intestines, &c. was the natural consequence. If they were so fortunate as to escape the pernicious effects of water, thus taken into the stomach, they were in equal danger from the men being taken from them immediately, and before the horses could be attended to, in order to get forage for the day: and it being, in general, almost dark when they returned in the evening, they remained in the same state as when they came in, until seven o'clock, the stable hour: therefore, as the autumn was exceedingly wet, and as

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a drizzling rain or slight shower did not prevent their going out, they were frequently exposed to all the injurious effects of evaporation, as well as an excessive ingression of cold water twice a day, until the 9th of December, when an order was issued by the General of the district, that in future, the horses should be exercised between the hours of nine and twelve o'clock, A.M. The consequence was, that only two cases of the disease took place in those quarters afterwards: I may, therefore, surely be permitted to ask, will any person, after seriously reflecting on these circumstances, think it necessary to attribute to contagion alone, the production of this disease?

I attended the regiment at Dorchester, in 1784-5, and again in 1792; and though there were sixteen weeks continued frost during the winter of the first period, and during the second the regiment was augmenting, and frequently receiving young

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horses, yet in neither of these periods did either glanders or farcy occur among them. It is true, there was no barrack there then, neither were the horses injudiciously taken out to water at five o'clock in the morning in April, or at three P.M. in December. If I have been particular in relating the above circumstances, it is for two very important reasons. First, to shew from the injurious effects of such practice, that the evil may be corrected; and, secondly, to corroborate my opinion on this subject.

A circumstance which exceeds all that has fallen under my own observation, so fully corroborates what I have stated respecting the effects produced in close foul stables, especially on young horses, that I cannot forbear to mention it here. Being at Northampton, in the beginning of 1800, and speaking of the fatal effects produced in the barrack stables, I was informed by Lieutenant M. of the Royal

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Waggon Train, " That a regiment of dragoons that lay at Rumford in 1798 (to which he then belonged) had received fifteen young horses from a horse-dealer, just as the monthly return was sent off, and before the next monthly return was made out, fourteen of those identical horses were dead, so that in the same return, they included fifteen horses recruited, and fourteen dead." He added, that " it was generally believed, they all died in consequence of some infection they had received in the stables of the horse-dealer who sent them." But as he admitted that they did not communicate the disease to the old horses, with which they were intermixed, it would appear that contagion was falsely assumed, and that their death was more probably occasioned by confinement in an atmosphere possessing less oxygen than that in which they had been accustomed to breathe.

Since writing the above, a circumstance

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very similar has fallen under my own observation, which confirms the conclusion I have made from these premises.

From the 17th of July, until December, 1811, the regiment had received about 160 young horses, which (with a few exceptions) continued in usual good health, until December, when a frost having set in, the ventilators of the stables were wholly shut up, consequently many of the horses became affected with symptoms very unusual; such, indeed, as are only exhibited in those foul situations, a succession of which occurred daily, till the 1st of February, when the ventilators being re-opened, they disappeared. During this short period, six cases of death, three of glanders, and two of farcy, were produced. Here let it be observed, that from the time the regiment entered the barrack until now, no symptoms of glanders had existed in it; neither did any disease prevail amongst the old horses

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even at this time, but the young horses exclusively were affected; many of which, it is probable, had never been in a stable before. Therefore, it must indubitably appear, that the glanders, as well as every other disease that occurred, originated immediately in the stables: as a further corroboration of this fact, I have to observe, that if the subjects were observed when first affected, and immediately removed into a cool place, where they could breathe the pure air, they recovered; but on the contrary, if they remained in the same situation, they died. Here, however, as on all singular occurrences, many conjectures were hazarded respecting the cause of this sudden and fatal change; and as the horses were commonly observed during the stable hour, the general opinion was, that all those maladies were occasioned by the water which was then administered. But as the symptoms did not appear before the ventilators were

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shut, and disappeared on their being set open, the water can only be considered as the immediate or exciting cause, but that the predisposing or efficient cause of all was, the heat and impurity of the stables, or the want of pure air. In some cases, after death, the whole of the thoracic and abdominal viscera were found to be affected, more especially the stomach, liver, diaphragm, and lungs. In one case, the distention of the stomach was so great, that its coats resembled those of a bladder more than its natural structure: suppuration had also taken place in various parts of the diaphragm, the structure of the lungs was partially destroyed, the heart enlarged, and the pericordium full of a reddish turbid fluid.

In another, the stomach highly inflamed, without a preternatural distention, the liver greatly enlarged, the diaphragm also affected, and the extremities of the lungs exceedingly black; but in this

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case the living power being suddenly diminished, the structure of the whole (except part of the pleura) was entire. Another was carried off by a violent diarrhœa, oscasioned by an extraordinary secretion of bile, &c. &c.

Although we thus see the heat and impurity of a close stable, the perpetual vicissitudes of temperature and condition of the atmosphere to which it has been exposed, diffusing its baneful influence over the whole animal frame, deranging the functions, decomposing the animal matter, destroying the organization, and extinguishing the principles and powers of life; yet, from what I have observed, it does not appear that the most extreme degree of heat or cold (especially the latter) experienced in the temperature of our atmosphere, though continued for a considerable length of time, would produce those effects, provided that it be

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kept equal and pure, and the animal at liberty to move about.

When the British army marched through Holland, in the winter of 1794-5, the frost, which was then extremely intense, continued with little variation, upwards of three months: during that time, the regiment was kept moving about day and night, and when halted, the horses stood in churches, barns, hovels, &c.: yet no disease prevailed amongst them; but, on the contrary, they continued healthy and vigorous as long as the frost lasted.

The ass, whose organs of respiration are in every respect similar to those of the horse, seems also to confirm this opinion, as well as that of the glanders being propagated in the situation already described. It is not in consequence of any peculiarity in the constitution of this dull animal, which renders him less liable than the horse to this disease; but from his being thought unworthy of the unnatural

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treatment to which the horse, in his domesticated state, is too generally exposed. Either standing alone in some mean cot or hovel, into which the air has always a free access, no predisposition or susceptibility to disease is excited in the system; or ranging about in the open atmosphere, inured to the revolutions of the seasons, which approach him gradually, and furnished with a thick rough coat, to protect him from the inclemency of the weather (and the influence of a morbid poison) the constitution is nowise affected by the change. Being thus accustomed to live in his natural sphere, he is subject to few diseases: but the life of the horse being generally unnatural, his disorders are more numerous than those of any other animal, man excepted. To conclude, I would just remark, that some of the horses which survived the shock produced by the morbid heat of the stables during the time above-men-

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tioned, became glandered from three to six months afterwards; and also that the disease continued, at intervals, to appear amongst the young horses that subsequently joined the regiment in separate lots, at various periods. And notwithstanding that some of the old horses stood with them at the time that they exhibited symptoms of the disease, and also occupied the same stalls after their removal, yet in no instance were any of them affected with it during the time they remained in the barracks, which was eighteen months: a circumstance, which, were it necessary, might be adduced in confirmation of what has been advanced respecting the influence of an impure situation being most injurious to young animals when they are first exposed to it; as well as that of its being a teeming source of the disease on almost every occasion. Agreeably to this, I have been informed that the glanders are very pre-

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valent amongst the horses employed under ground in the collieries about Newcastle-upon-Tyne; a circumstance which shews that whether the disease be found to exist either above or below the surface of the earth, it manifests the same origin. Is it not a notorious fact, that diseases of every description prevail to a far greater extent among the horses that are kept in large towns, than among those which remain in the country? For instance, if we take a view of the great and continual influx of horses into London, and also consider the number that die, together with those which are daily destroyed at the various slaughter-houses, erected for that purpose within its precincts. It seems highly probable, that the number of horses annually consumed by disease, in that great city, is equal to the aggregate consumption of the whole country, the army excepted. From whence arises this disparity? Why do the horses in the

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country continue more healthy, and live longer than those that are kept in town? Is it not in consequence of the former always breathing the vital air, a principle which the latter are seldom, if ever, so fortunate as to inhale in its purity? Having thus shewn that the disease has been produced in a new barrack, in the hold of a ship, and also amongst young horses, to neither of which infection could possibly have had access; may we not from hence infer, that a horse being affected with the glanders, in what has been denominated an infected situation, is no proof of the contagious nature of this disease?

NINTH.—GLANDERS NOT ALWAYS INCURABLE.

1.

A short time after the regiment took the field in 1793, a troop horse, when on picquet during the night, was observed to have an hæmorrhage from both nostrils,

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in consequence of which, he was sent back to camp, and next morning the mucous membrane in both nostrils was found very much inflamed and ulcerated; the lips and head, also, were covered with small farcy tumours, and an enlargement attached to both jaw-bones. This subject recovered, and underwent the vicissitudes of that, and also four subsequent campaigns, without shewing the least symptom of the disease, but remained in the regiment until worn out by age, when he was sold.

2.

1799. A horse was found to have a discharge from the left nostril, and an indurated tumour fixed to the jaw-bone of the same side; but as there was very little inflammation, and no ulceration visible in the mucous membrane, the frontal sinus was supposed to be affected: a perforation was accordingly made just

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in the inferior part of it, through which the matter issued very copiously, removing the hair, and excoriating the skin, from the perforation to the extremity of the upper lip. This horse recovered in four months, remained in the regiment until the reduction in 1802, and shewed no symptoms of the disease during that time.

3.

1800. A troop horse was affected in both frontal sinuses, with a hard tumour in the inside of both jaw-bones. This subject recovered perfectly in ten months from the time he was put into the hospital stable: he was afterwards sold, without shewing any symptoms of the disease.

4.

About the 9th of November, 1804, a grey mare, the property of a captain, was affected with a diseased secretion in

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both nostrils, supposed to be the strangles. About ten days afterwards, I saw her, and found the mucous membrane highly inflamed and ulcerated in both nostrils; two hard tumours were also attached to the maxillary bones. This mare recovered in eighteen weeks. The greatest part of this time she stood in an open stable, where glandered horses had been before, and actually with others exhibiting symptoms of the disease, some of which were shot during the time she remained there. She remained in the regiment upwards of two years afterwards, had no relapse, nor shewed the least indication of the disease.

5.

1807. No. 12. (E. troop.) This subject is one of the twenty-five on board the ship already mentioned, on our return from Ireland, in 1806, and with one more, was, I believe, the sum total of those that survived the direful effects of that

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situation: after debarkation, he was so weak, that though he only carried a saddle, he was brought forward with great difficulty; he actually fell into a ditch, and was in danger of being drowned before he could be got out again. When he arrived at Birmingham, there was a profuse discharge from both nostrils, and tumours between the jaw-bones: as he recovered strength, however, these symptoms disappeared, but soon after they recurred, and continued to disappear and return at short intervals, until May, 1807, when they manifested themselves with such virulence, that he was again put under a course of medicine, which was continued upwards of six months. He recovered perfectly, and is at this moment in as good health as any horse in the regiment. He stood seven weeks on board ship during the Walcheren expedition.

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6.

February 24, 1809, a horse four years old exhibited symptoms of glanders, and on the 25th of March, was put into a stable appropriated for such horses, from the time that they became diseased, until they were ordered to be destroyed. He remained there nine months: during the whole of that period, more especially from the 10th of September, when the regiment returned from Walcheren, he stood with other horses which were also diseased, until the 25th of December, when he joined the troop to which he belonged, perfectly recovered.

Were not the cases already related so numerous, many others might be added, amongst which are some of a more recent date. But it will probably be asked, why all the horses that became diseased in the regiment, were not used as well as the above? A. The frequent production

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of the disease in barracks, the few stalls allowed for those subjects, the positive order for their destruction, and the length of time employed in performing a cure, rendered the preservation of a proper subject extremely difficult, and even dangerous. There were also many of the subjects in which the glanders were the effect of some other disease, that rendered a cure impossible, and therefore not attempted.

But here another question of importance seems to demand our attention; that is, whether, under circumstances attended with so much expense and hazard, the subject be worth keeping for twelve months? If the provender of a troop horse cost 1*s.* 8*d.* per day, it will in twelve months amount to £30. 8*s.* 4*d.* which is £4. 3*s.* 4*d.* more than his original price. Now, should he be a good clever horse, and upwards of five years old, he must, at the present advanced price of horses,

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be worth more than that sum when well, nor can he be replaced by one of the same age, equally good, for the government price; and, therefore, he must be succeeded by a colt of three years old, which must necessarily be kept one year and a half, at least, before he is able to perform field duty, or carry a dragoon on actual service. And even during that period, there will be as much hazard of his becoming diseased, or of his dying, as there is of the recovery of the one that is diseased; and as the keeping of both would be equally expensive, that of the colt would amount to £45. 12*s.* 6*d.* which added to his original purchase, £26. 5*s.* makes £71. 17*s.* 6*d.* therefore, should the other recover in twelve months, there would be a saving of £41. 9*s.* 2*d.* besides the advantage of six months' service. And as many of those diseased, might probably recover much sooner, the

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advantages would be proportionably greater.

In every barrack, therefore, more especially in those intended for the head quarters of a regiment, where those cases ought always to be kept, there should be a stable, into which all local cases of glanders should be put, with the view of attempting a cure, The subjects should be looked after by good steady dragoons, who, if it can possibly be avoided, ought never to be changed. This would excite emulation among the men, and the veterinary surgeon, being delivered from the degrading necessity of certifying that a horse is incurably glandered, without being allowed to ascertain the fact by experiment, would now prosecute his endeavours with confidence and vigour. And the hope of attaining a more certain and expeditious method of curing the disease, would produce a spirit of

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emulation in every veterinarian in the army, and eradicate those absurd notions with which they have been imbued respecting the disease.

THE END.

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